United States Department of Agriculture
Forest Service

Corral Creek Road Relocation & Restoration Project

Environmental Assessment

La Grande Ranger District, Wallowa-Whitman National Forest, Union County, Oregon

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Introduction

We are proposing to relocate and reconstruct portions of two roads, enhance instream habitat on Corral Creek, and fence a portion of Pole creek. These actions are proposed to be implemented on the La Grande Ranger District of the Wallowa-Whitman National Forest.

We prepared this environmental assessment (EA) to determine whether implementation of the relocation and reconstruction of portions of roads 7700600 and 602, enhancement of instream habitat with large woody debris, and construction of exclosure fencing on Pole Creek may significantly affect the quality of the human environment and thereby require the preparation of an environmental impact statement. By preparing this EA, we are fulfilling agency policy and direction to comply with the National Environmental Policy Act (NEPA). For more details of the proposed action, see the Proposed Action and Alternatives section of this document.

Proposed Project Location

The Corral Creek Road Relocation and Restoration project area encompasses the 15,343 acre South Fork Catherine Creek subwatershed (170601040502) within the Upper Catherine Creek watershed (1706010405); however, activities focus on the 7700600 and 7700620 roads located approximately 12 miles southeast of the town of Union Oregon on National Forest System lands within Union County on South Fork Catherine Creek and Corral Creek, a tributary to the Grande Ronde River. The project is located on 1.0 miles of South Fork Catherine Creek (Road Miles 4.5 – 5.5) (T 5S, R 42E, Section 28), 1.75 miles of Corral Creek (T 5S, R 42E, Sections 16, 21, & 28) and 0.15 miles of Pole Creek (T5S, R 42E, Section 22). Refer to Figure 1 Corral Creek Vicinity Map.

Forest Plan Management Direction

This environmental assessment is tiered to the Final Environmental Impact Statement (FEIS) for the Wallowa-Whitman National Forest Land and Resource Management Plan, as amended. Major Plan amendments relevant to this project include:

> *EA on Continuation of the Interim Management Direction Establishing Riparian, Ecosystem, and wildlife Standards for Timber Sales, as signed on May 20, 1994,* which provides additional standards and guidelines (USDA, 1994, and commonly known as the Screens);
>
> *Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California*, as signed in 1995, which provides additional standards and guidelines (USDA, 1995, and commonly known as PACFISH). Refer to guidelines described on page 42 of the EA for specific PACFISH direction.

The Forest Plan, as amended, includes management goals and objectives and standards and guidelines, both forest-wide and specific to land allocations. All proposed activities in this project are consistent with the management guidance and direction provided in the Forest Plan.

The project area is allocated under the Wallowa-Whitman National Forest Plan Forest and its Environmental Impact Statements (as amended) to the following management areas (refer to map

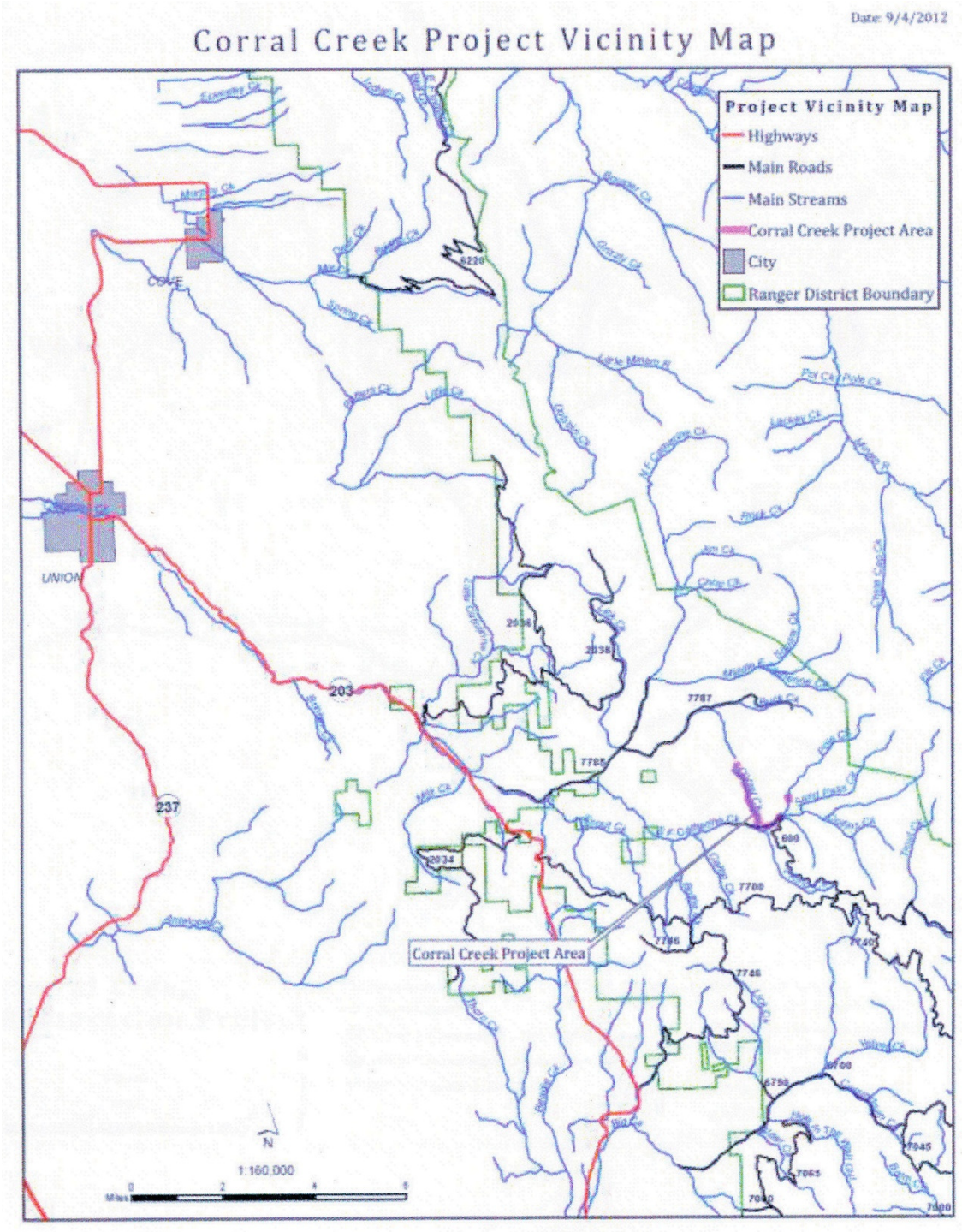

Figure 1. Vicinity map

in Appendix A). All applicable management direction specific to the following management areas apply to this project area (refer to Management Direction Map in Appendix B):

MA1 – (10,523 acres). Emphasizes wood fiber production on suitable timberlands while providing relatively high levels of forage and recreational opportunities.

MA3 – (219 acres). These management areas provide a broad array of forest uses and outputs with emphasis on timber production. However, timber management is designed to provide near-optimum cover and forage conditions on big game winter (MA3) and selected summer ranges (MA3A).

MA4 – (1,947 acres). These areas preserve wilderness qualities and are managed in accordance with the Wilderness Act of 1964, the Oregon Wilderness Act of 1984, and Forest Service Manual 2320.

MA6 – (2,052 acres). Emphasizes opportunities for those dispersed recreation activities usually recognized within the relatively high elevation areas. The areas are to remain relatively natural and undeveloped. A road density similar to 1985 levels will be maintained.

MA15 – (551 acres). These areas are intended to maintain habitat diversity, preserve aesthetic values, and to provide old growth habitat for wildlife. Evidence of human activities may be present but does not significantly alter the other characteristics and would be a subordinate factor in a description of such a stand.

Although management areas 4, 6, and 15 are within the project area, there will be no project activities conducted within in them. Project activities are completely limited to lands allocated to MA1. The remainder of the project area acres are private lands located within the project area boundary.

Need for the Proposal

The desired conditions for the habitat within this project area relates primarily to spring/summer Chinook habitat, summer steelhead habitat and migratory habitat for bull trout, specifically through the following habitat elements.

Fish Passage: All stream channels are fully accessible to fish species present in the subwatershed.

Water Quality: Water quality supports stable and productive riparian and aquatic ecosystems. Riparian management objectives are met and no chronic infusion of fine sediment contributed by stream bottom road bed erosion exists.

Floodplain Connectivity: The desired future condition is a floodplain that is functional and connected within Corral Creek. A functional floodplain would improve the capture, storage and safe release of water, increasing flows during the low flow period and decrease stream temperatures. The floodplain also contributes to fish habitat complexity; riparian vegetation recruitment, growth and vigor; forage availability; recommended channel dimension, pattern and profile; future recruitment of large woody material (LWM); and spawning gravel.

Habitat Complexity: The stream channel has an array of complex habitat features, providing optimum habitat for threatened, endangered, sensitive, and native aquatic species.

Riparian Vegetation: Riparian areas have a diverse riparian plant community which provides optimum floodplain function, stream shade, and LWM recruitment.

Threatened, sensitive and native aquatic species populations: Optimum aquatic habitat with limited anthropogenic effects is available contributing to healthy populations of threatened, endangered, sensitive, and native aquatic species populations.

This proposal is needed because desired conditions within the project area are currently not being met due to historic timber harvest and associated road construction which have negatively affected riparian habitat and water quality within Corral, South Fork Catherine, and Pole Creek within the project area. The 7700600 and 7700620 roads are located within the riparian habitat conservation areas (RHCA) of Corral Creek and South Fork Catherine Creek. Construction of the road in the RHCA is not only impeding the ability of these streams to interact hydrologically with their floodplains but is also actively contributing sediment to the stream channels. In addition to the impacts of this road, the historic removal of large conifers from the valley bottom of these streams has reduced the potential for recruitment of large wood to the stream over the last 35-50 years. There are also three culverts within the first mile of Corral Creek limiting fish passage into the upper reaches of this stream.

Livestock impacts in nearby Pole Creek are negatively affecting water quality within 0.15 miles of stream channel due to easy access and high livestock traffic causing bank instability and degradation of riparian vegetation.

There is a need to rehabilitate the floodplain and in-stream habitat within these stream reaches to provide for optimum habitat for threatened and resident fish species. Access into the area provided by the 7700600 and 7700620 roads is also important for recreation, emergency services, firefighting, and future management of the resources within the area. Therefore, there is a need to continue to provide access into this area while protecting water resources.

As a result of the existing condition, the purpose of this project is to meet the desired condition within this area and address ecological needs to:

- Improve fish passage
- Decrease erosion of fine sediment
- Improve floodplain function and connectivity
- Improve water capture, storage and safe release within the floodplain.
- Increase quantity and quality of pools
- Increase fish cover
- Increase habitat complexity
- Increase residual pool depth
- Increase number of large and medium pieces of large woody debris in the stream
- Increase spawning gravel recruitment
- Improve riparian vegetation and improved future large wood recruitment potential

Public Involvement and Tribal Consultation

The Forest Service consulted the following individuals, Federal, State, tribal, and local agencies during the development of this EA:

The Corral Creek Road Relocation project was published in the Wallowa-Whitman Schedule of Proposed Actions (SOPA), a quarterly publication, in October 2011 and has appeared in each quarterly SOPA since then. This mailing is distributed to a mailing list of individuals, organizations, and agencies and is published on the forest web page.

Scoping and consultation for the project was initiated and is ongoing with the Nez Perce Tribe, the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) and ODF&W.

A detailed description of the proposed action was mailed on February 19, 2013 to approximately 95 forest users and concerned publics soliciting comments and concerns related to this project. Two emails letters were received from local tribes indicating an interest in this project, concern over protection of cultural resources, and asking questions about some of the site specific aspects of project design and implementation.

This project has been reviewed and approved by the State Historical Preservation Officer (SHPO).

Consultation with National Marine Fisheries Service and US Fish and Wildlife Service for threatened and endangered species has been completed for this project.

An analysis file for this project is available for public review at the La Grande Ranger District. The analysis file includes specialist's reports, data specific to the project, public notifications and their responses, meeting notes, and miscellaneous documentation.

Proposed Action and Alternatives

The following is a brief description of the proposed action and alterative(s) that meet the need for action. NEPA requires that the agency study, develop, and describe appropriate alternatives to recommend courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources. Because no unresolved conflicts exist, the EA will only analyze the proposed action and proceed without consideration of additional topics (36 CFR 220.7(b)(2)(i)).

Alternative One

This alternative constitutes the "No Action" required by NEPA. Road work and activities identified in this analysis would be deferred. This alternative forms the baseline for comparison of the action alternatives.

Proposed Action

Approximately 0.6 mile of open road adjacent to South Fork Catherine Creek and Corral Creek, and 0.53 miles of closed road adjacent to Corral Creek would be obliterated and re-contoured. Approximately 0.35 mile of road construction would occur to maintain access through the area. In addition to the restoration work described below, one existing gravel pit would be enlarged (refer to map) to provide crushed rock for road construction needs.

Corral Creek

> Culvert Removal: Three culverts would be removed to allow for improved fish passage. Two of these culverts are associated with the road re-contour. The

channel would be reestablished similar to up and downstream channel characteristics. One of the culverts (furthest one upstream) would involve removing the culvert and reestablishing a channel that would allow for a ford if the road were needed in the future.

Wood & Boulder Placement: A combination of cut logs and root wads would be placed within 1.75 miles of Corral Creek; 1.45 miles utilizing an excavator for placement of wood, and 0.3 miles of wood placement by hand. Boulders taken from on site would also be placed at entrance points to block motorized access to protect the restoration work and within the streams to create pools. All of the woody debris (logs & rootwads) would be obtained on site from dense stands adjacent to Corral Creek (up to 300 feet from the stream). Trees would be felled or pushed over. All of the trees would be less than 21" in DBH and be imported into the creek with the use of an excavator and chokers where needed. All excavators would be required to have biodegradable hydraulic fluids ("fish friendly") during project activities.

Road Re-contour: There would be 0.4 miles of open road and 0.53 miles of closed road re-contoured in close vicinity with the stream and floodplain. Floodplains would be reconstructed where applicable. Wood would be placed on the re-contour to prevent erosion and allow for microsites. Two non-fish bearing stream culverts would be removed. The natural drainage pattern would be reconstructed.

Planting: Planting of conifer seedlings and native grass and forb seed would occur on approximately 1 mile of Corral Creek. This would occur primarily with the re-contour portions of the project.

Road Reconstruction: Approximately 0.5 mile of existing road adjacent to Corral Creek would be retained and reconstructed. Two non-fish bearing culverts would be replaced and the road would be out-sloped and resurfaced.

South Fork Catherine Creek

Road Re-contour: There would be 0.2 miles of open road in close vicinity with the stream and floodplain re-contoured and obliterated. Wood would be placed on this project area to prevent erosion and allow for planting microsites. One culvert would be removed that is associated with road drainage.

Planting: Planting of conifer seedlings and grass/forb seed would occur on approximately 0.2 mile of South Fork Catherine Creek. This would occur primarily with the recontour portions of the project.

Road Reconstruction: Approximately 0.8 miles of road adjacent to South Fork Catherine Creek would be reconstructed. Two culverts associated with road drainage would be replaced and the road would be out-sloped and resurfaced.

Pole Creek

An exclosure fence would be constructed on 0.15 miles of Pole Creek. The exclosure fence would be a 3-strand barbed wire let-down fence.

Implementation - Wood placement and culvert removal would occur from August 1, 2014 through August 15, 2014. Road obliteration and relocation, culvert removal and replacement, road resurfacing, in-stream wood placement and floodplain work, fence construction and boulder placement would occur from August through October of 2014. Seeding would occur in the fall of 2014. Planting would occur from April 2015 to June of 2015.

Management Requirements, Constraints and Mitigation Measures

The following items are included in the action alternative and provide the measures necessary to keep project impacts at acceptable levels.

Soils

Minimize detrimental soil conditions with total acreage detrimentally impacted not to exceed 20 percent of the total acreage within the activity area including system roads. Where detrimental conditions affect 20 percent of more of the activity area, restoration treatments will be considered. Detrimental soil conditions include compaction, puddling, displacement and severe burning.

The following guidelines from The Watershed Management Practices Guide for Achieving Soil and Water Objectives for the Wallowa-Whitman National Forest (Hauter and Harkenrider 1988) are applicable to this project:

- Soil Moisture: "Under saturated soil conditions no off-trail skidding or machine falling is allowed. Skidding on designated trails may be allowed as long as such use does not cause deep rutting causing erosion damage, or erosion damage potential. Allowing skidding under these conditions makes mitigation by subsoiling/scarifying less effective and should be avoided both on and off trails." Existing skid trails will be used as much as possible.
- Subsoiling/Scarifying: Skid trails and landings will be evaluated for the need for subsoiling/scarifying following treatment by the sale administrator and district watershed personnel. Sub-Soil treatment will be determined by the district resource specialists and based on soil depth and characteristics. Sufficient woody material will be left to maintain long term site productivity. This recommendation specifies a minimum of 10 tons per acre of woody material greater than 3 inches in diameter.
    - Subsoil to a depth of 20-24 inches on skid trails and landings.
    - Discontinue subsoiling where large rocks are continually brought to the soil surface, or operate with the shoes at a shallower depth (15 inches).
- Construct waterbars on erosion-sensitive sections of roads, where pre-project erosion has and will continue to damage the road surface.
- Seed roads, landings, and skid trails after logging is completed, as needed, with site-specific seed mix, for erosion control. Consider using waterbars and slash on skid trails.

Livestock Grazing

Fences: All improvements should be protected during restoration activities. If it is necessary to cut range fences, the contractor must be required to immediately repair them to Forest Service standards. These standards are available and should be made a part of the restoration contract. Fence line right of ways must be kept cleared for eight feet on each side of the fence following harvest or piling.

One cattleguard will require a move from the existing road prism at the mouth of Corral Creek to the newly constructed road. A 12 foot side gate will be required to allow passage of livestock and equipment.

Seeding of disturbed soil will be completed with a mix of native grasses and forbs to be provided by the La Grande Ranger District. Mulching will be completed using Oregon State Certified weed free wheat straw.

Roads/Access/Safety

The 7700600 road would be closed at the Sand Pass Trailhead during road construction operations. The 7700620 road would be closed at the 7700626 intersection during these periods. Other activities (in-stream work, road obliteration on the closed portion, planting, seeding and mulching) would not involve the above road closure.

Appropriate temporary road closures, flagging, signage, and public notice will be provided during project implementation to ensure public safety.

Noxious Weeds

The proposed rock source on the 7700620 road will require pretreatment of invasive species if they are present. This will be hand pulling of mature plants or herbicide treatment if currently permitted.

Prior to project implementation, known weed sites and any additional weed sites discovered at the time of implementation would be flagged and pulled by knowledgeable personnel approved by the District's Noxious Weed program. Equipment would be power washed prior to operating on this project. The project lead may choose to have equipment operators avoid the flagged noxious weed areas.

An assessment report of known noxious weed populations is available in the Analysis File. Noxious weed locations also appear on project maps in the analysis file. If new noxious weed infestations are located within the project area, a noxious weed inventory and site assessment will be completed.

The analysis for vegetation management is conducted in accordance with the 1990 Forest Plan Standards and Guidelines, the 1998 Forest Noxious Weed EA, the Integrated Noxious Weed Management Plan - Wallowa Whitman National Forest (INWMP, 1992), and the 2005 Pacific Northwest Region Invasive Plant Program Preventing and Managing Invasive Plants FEIS. Management activities will give consideration and evaluation of prevention strategies during the planning process (INWMP, Chapter V. Prevention Strategies, Section B).

The following measures shall be implemented to reduce new establishment or spread of noxious weeds and responds to the non-key issue of noxious weeds:

No road construction or maintenance should occur at these sites, until the previous year's dead plants/stalks have been removed.

1. Noxious weed locations are on maps located in the Corral Creek analysis file. A copy of these will be included in the contract preparation package, for use by the contract administrator. These sites will be reviewed with the contractor and mitigations explained.
2. Treatment of the noxious weed sites located along haul route roads should be a high priority, along with monitoring.
3. Rock pit and sources should be inspected, and cleared prior to use of any materials.
4. Known infestations should be designated as Areas to Protect.
5. Before road maintenance activities on roads with active infestations occurs the contracting officer (COR) will contact the District Noxious Weed Coordinator, to inform them of maintenance plans. The Noxious Weed Coordinator will take the appropriate action to treat the noxious weeds on the infested portions of these roads. (Note: Recommended treatment includes removal of previous year's stalks, to be conducted before maintenance activities occur there; and maintenance activities should not be conducted after the current year's plants have bolted and flowered (mid to late June) unless prior treatment of current year's growth occurs.)
6. If new noxious weed infestations are located within the project area, a noxious weed inventory and site assessment (as defined in the W-W INWMP) will be completed. Location of other species, conditions or future treatments may require additional analysis to determine the appropriate treatment method.
7. All mapped weed sites will be designated as "Areas to Protect" and include in the contract package for use by the contract administrator. Landings and staging areas should not be built on or near sites of noxious weed infestation.
8. Highly disturbed areas will be seeded. The seed mix to be used will consist of native species, or a non-native species mix, to be approved by the District Diverse Species Program. This may include one fast germinating annual grass species to provide immediate ground cover. Seed application rates will be adjusted, as needed to compensate for the broadcast method of application, and to generate vegetation densities adequate to help in deterrence of noxious weed invasion.
9. Seed will be certified weed free, per the Wallowa-Whitman INWMP protocol.
10. All hay or straw used for mulching, erosion control, or other rehabilitation purposes will be weed free (per the Wallowa-Whitman INWMP protocol).
11. All equipment to be operated on the project area will be cleaned in a manner sufficient to prevent noxious weeds from being carried onto the project area. This requirement does not apply to passenger vehicles or other equipment used exclusively on roads. Cleaning, if needed, will occur off of National Forest System lands. Cleaning will be inspected and approved by the Forest Officer in charge of administering the project.

Fisheries

All instream work would be completed from July 1 through July 31, 2014, which is the instream work window for federally listed fish species. Instream work is defined as all work that is completed within the bankfull channel.

Water Quality

A Spill Prevention Control and Containment Plan (SPCCP). The contractor would be required to have a written SPCCP, which describes measures to prevent or reduce impacts from potential

spills (fuel, hydraulic fluid, etc.) The SPCCP should contain a description of the hazardous materials that would be used, including inventory, storage, handling procedures; a description of quick response containment supplies that would be available on the site (e.g. a silt fence, straw bales, and an oil-absorbing, floating boom whenever surface water is present).

Staging areas would be designated at least 300 feet slope distance from the stream, which should be outside of the 100 year floodplain. These staging areas would be used for fueling, equipment storage, and maintenance.

All equipment used for instream work shall be cleaned and leaks repaired prior to entering the project area. External oil and grease, along with dirt and mud would be removed prior to construction operations. Thereafter, equipment would be inspected daily for leaks or accumulation of grease, and fix any identified problems before entering streams or areas that drain directly into streams or wetlands.

The time that heavy equipment is in stream channels would be minimized as much as possible.

The following best management practices (BMPs) would be incorporated into the project design and implementation.

New Road Construction and Road Reconstruction

- Delineating construction impact areas on project plans and confining work to the noted area;
- Conducting work during dry conditions;
- Install sediment controls before initiating surface-disturbing activities to the extent practical;
- Minimize vegetation removal and ground disturbance;
- Avoid deposition of materials outside of the designated roadway;
- Establishing designated areas for equipment staging and stockpiling of materials;
- Do not sidecast materials within RHCAs;
- Use full bench construction techniques where stable fill construction is not possible;
- Balance cuts and fills to minimize disposal needs;
- Leave existing rooted trees or shrubs at the toe of the fill slope to stabilize the fill;
- Do not place excess or unsuitable materials on slopes with a risk of excessive erosion, sediment delivery to waterbodies, or within the RHCA;
- Properly compact fills to avoid or minimize erosion;
- Stabilize disturbed soils;
- Use suitable measures to avoid, to the extent practicable, or minimize direct discharges from road drainage to nearby waterbodies;
- Develop and implement an erosion control and sediment plan that covers all disturbed areas including borrow, stockpile, fueling and staging areas used during construction activities;
- Maintain the natural drainage pattern of the area wherever practicable;
- Routinely inspect construction sites to verify that erosion and stormwater controls are implemented and functioning as designed, and are appropriately maintained;
- Use suitable measures in compliance with local direction to prevent and control invasive species;
- Refuel and service equipment only in designated staging areas;
- A pollution control plan (PCP) will be developed for the project, and is a contractual requirement. This may include but is not limited to; fueling to be done outside of the

floodplain, and hazmat booms kept on site where there is a potential for toxic spill into aquatic systems.
- If pickup fuel tanks are used they are contained in the bed of the truck and secured.
- If fuel trucks are used the trucks are parked in designated industrial sites located at least 150 feet from a stream channel or flood prone area, or as far as possible from water bodies where local site conditions do not allow a 150-foot setback. This will minimize the potential for a fuel spill to reach a fish bearing stream.

Culvert Removal, Road Contouring, and Large Wood Placement

- Ensure all equipment operated in or adjacent to a waterbody is clean of aquatic invasive species, noxious weeds, oil and grease, and equipment is well maintained;
- Use vegetable oil or other biodegradable hydraulic oil for heavy equipment hydraulics wherever practicable when operating in or near water;
- Contour site to disperse runoff, minimize erosion, and provide a favorable environment for plant growth;
- Use suitable species and establishment techniques to re-vegetate the site in compliance with local direction and requirements for vegetation ecology and prevention and control of invasive species;
- Remove as much fill as possible from the top and sides of culverts prior to removal to minimize sediment introduction into Corral Creek and South Catherine Creek;
- Keep excavated materials out of the waterbody;
- Minimize heavy equipment entry into or crossing water to the extent practicable;
- Avoid or minimize unacceptable damage to existing vegetation, especially plants that are stabilizing the bank of the waterbody;
- Seed with native grasses to stabilize disturbed soils.

Wildlife

Trees needed for instream structure construction would not involve removal of snags/green trees that are over 21 inches dbh. No ponderosa pine snags would be used for project activities.

Erosion Control

All areas disturbed by equipment would be seeded with a native grass/forb seed mix after project completion.

Certified weed free mulch would be placed in conjunction with the above seeding.

Cultural Resource Protection

All identified sites within the Corral Creek road relocation project area have been avoided during project design.

If any new cultural resources are located during project implementation, work would be halted and the South Zone Archaeologist notified. The cultural resource would be evaluated and a mitigation plan developed in consultation with the Oregon SHPO if necessary.

Proposed, Endangered, Threatened, and Sensitive Species (PETS)

Biological evaluations and/or assessments have been completed for plants, fish, and wildlife PETS species. Contract provisions will be included to provide for the protection of areas where PETS occur and for those that may be discovered in the area during the contract period.

Water and Material Sources

Water Sources

Water sources will be designated from the La Grande Ranger District Water Source Inventory. Available water sources within this area are as follows:

North Fork Catherine Creek, South Fork Catherine Creek, and Buck Creek

Material Sources:

Rock Pit – T5S, R42E, Section 2 SE/SW at the junction of roads 7700620 and 7700625. This rock source would be expanded to accommodate the construction and reconstruction needs of this project.

Monitoring Plan

Monitoring specific to project activities would be accomplished to assure that activities conform to objectives of the Forest Plan. Project level monitoring is a component of Forest Plan monitoring. The following types of monitoring would be accomplished:

Implementation Monitoring - Are the project designs being implemented as planned?

A fisheries biologist/hydrologist would be on site during project operations to ensure that the project design and mitigation measures are implemented as planned.

Effectiveness Monitoring - Were the desired results achieved?

- Structure construction: Monitoring of structures would involve photo points of before and after operations occur. Follow up photo points would occur at year 1, year 3, and year 5 after project completion. This monitoring will be completed by the USFS.
- Stream Survey: Region 6 Level II Stream Habitat Inventory have been conducted in this project area (completed 2012) and at year 1 and year 5 after completion. This monitoring will be completed by the USFS.
- Plant/seed survival: Native plantings and seeded areas would be evaluated for survival on a yearly basis for three years after project completion through photo points and determining plant survival. If plant/seed survival is poor, then subsequent planting and/or seeding would occur. This monitoring will be completed by the USFS.
- Noxious weeds: Noxious weeds would be monitored, yearly, for three years after project operations. This monitoring will be completed by the USFS.

Other -

- Reports: A preliminary final report that describes the actual implementation of this project and associated monitoring would be completed in the winter of 2014. A final report would be

completed in the winter of 2015. After final report completion, monitoring reports would be completed the following winter after monitoring is completed.

Table 1. Summary of proposed actions for each action alternative for the Corral Creek Project.

Activities	Specific Action	Alternative 1	Alternative 2
Road Work	Road Reconstruction	0	1.3 miles
	New Road Construction	0	0.35 miles
	Closed Roads to be Recontoured	0	0.53 miles
	Open Roads to be Re-Contoured	0	0.6 miles
	Culvert Removal	0	3 culverts
Stream Restoration	Corral Creek	0	1.75 miles
Planting-vegetative Restoration	Corral Creek and South Fork Catherine Creek	0	1.2 miles or 3.6 acres
Fencing	Pole Creek Exclosure Fence	0	800 feet

Environmental Impacts of the Proposed Action and Alternatives

This section summarizes the potential impacts of the proposed action and alternatives for each impacted resource. Resources that were not impacted and therefore not further analyzed include: forest vegetation, minerals, wilderness, and inventoried roadless areas.

The No Action Alternative (Alternative 1) and Action Alternative (Alternative 2) are described in detail in Chapter 2. This chapter discloses the anticipated environmental effects of these alternatives on various resources for which there are potential direct, indirect and cumulative effects. The effects analysis forms the basis for comparison of the alternatives.

For the purposes of this EA, the cumulative effects are the sum of all past and present actions, and reasonably foreseeable future actions. The purpose of the cumulative effects analysis in the EA is to evaluate the significance of the No Action's and Action Alternatives' contributions to cumulative effects. A cumulative effect is defined under federal regulations as follows:

> "...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7).

All known baseline activities used by the Interdisciplinary team for their cumulative effects analyses are located in Appendix D of this EA. The duration and geographic scale of direct, indirect, and cumulative effects varies, and is addressed by each resource and subject area. In addition, the type of projects considered under the cumulative analysis varies according to the resource and nature of project being considered.

The best available science is considered in preparation of this EA; however, what constitutes best available science might vary over time and across scientific disciplines. As a general matter, we

show consideration of the best available science when we insure the scientific integrity of the discussions and analyses in the project NEPA document. Specifically, this EA and the accompanying Project Record identifies methods used, references reliable scientific sources, discusses responsible opposing views, and discloses incomplete or unavailable information, scientific uncertainty, and risk (See 40 CFR, 1502.9 (b), 1502.22, 1502.24).

The Project Record references all scientific information considered: papers, reports, literature reviews, review citations, academic peer reviews, science consistency reviews, and results of ground-based observations to validate best available science. This EA incorporates by reference (as per 40 CFR 1502.21) the Project Record, including specialist reports and other technical documentation. Analysis was completed for Proposed, Endangered, Threatened, and Sensitive (PETS) Species, Botanical Resources (includes PETS species and Noxious Weeds), Wildlife (includes PETS species), Watershed and Fisheries (includes PETS species), Fire Management, Cultural/Heritage, Range Management, Engineering, and Recreation. Information from these reports has been summarized below in this Chapter. The Project Record is located at the La Grande District Office.

Aquatic and Water Resources

Affected Environment

The Corral Creek Road Relocation and Restoration project is located in the South Fork Catherine Creek subwatershed in the Upper Catherine Creek watershed in Union County, Oregon. Corral Creek is a tributary to the South Fork of Catherine Creek.

The project involves Corral Creek, a portion of Pole Creek, and a portion of the South Fork of Catherine Creek. Corral Creek is considered rearing habitat and designated critical habitat for summer steelhead although a culvert at the mouth is a complete barrier to the upstream migration of fish. The South Fork of Catherine Creek is spawning and rearing habitat and designated critical habitat for spring Chinook salmon, summer steelhead, and bull trout. Pole Creek is spawning and rearing habitat and designated critical habitat for summer steelhead and bull trout. Both Corral Creek and Pole Creek are tributaries to the South Fork of Catherine Creek. Redband trout are present in all of these streams and are on the Regional Forester's Sensitive Species List.

Historic timber harvest and associated road construction have negatively affected riparian habitat and water quality within Corral, South Fork Catherine, and Pole Creek within the project area. The 7700600 and 7700620 roads are located within the riparian habitat conservation areas (RHCA) of Corral Creek and South Fork Catherine Creek. The roads in the RHCA have altered hydrologic and riparian function and are a chronic source of sediment to the stream channels. In addition to the impacts of this road, the historic removal of large conifers from the valley bottom of these streams has reduced the potential for recruitment of large wood to the stream over the last 35-50 years. There are also three culverts within the first mile of Corral Creek limiting fish passage throughout the stream.

A short stream reach on Pole Creek approximately 0.15 miles in length is highly accessible to livestock due to an old road crossing. Livestock have the potential to degrade this highly accessible reach of stream.

Table 2 shows the results of fish habitat surveys for streams associated with the Corral Creek Road Relocation and Restoration project. Stream survey information was obtained from the Region 6 stream survey database and surveys are on file at the La Grande Ranger District. Surveys within the analysis area were completed in 1991, 2008, and 2012. Survey information was collected utilizing the Hankin and Reeves methodology as modified by the PNW R6 Regional Office. Surveys from the early 1990s may not represent current habitat conditions within streams, but does provide information on the general character of streams. The number of pieces of large wood has likely increased since the early 1990s leading to an increase in the number of pools per mile due to additional large wood recruitment. The number of pieces of large wood has likely increased since the early 1990s. The width to depth ratio is probably similar to those found in the early 1990s.

Table 2. Results of instream habitat surveys for streams associated with the project

Stream/Year Surveyed	Survey Length (miles)	Pools (#/mile)	Wetted Width (ft)	Stable Banks (%)	W/D Ratio	LWD (pcs/mi)
Corral Creek/2012	1.0	55	3.4	89.9	11.8	48
Pole Creek/1991	2.9	18	7	ND	6	84
S. Fk Catherine Crk/2008	8.8	9	17	99.9	13	23

ND=No Data

Effects Analysis

Introduction

The following is a site-specific analysis of the potential direct and indirect effects of this project on a) water quality and b) fish habitat and populations.

The description of watershed/fisheries resources, along with the analysis of the expected and potential effects for each alternative were assessed using field surveys, water quality databases, supporting literature, and professional judgment. The analysis area for aquatic and water resources is the South Fork Catherine Creek subwatershed.

Several management directives/recommendations apply to this project. The Management directives from the Wallowa-Whitman Land and Resource Management Plan (LRMP) 1990, the Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California (PACFISH 1995); the LRMP Biological Opinions (1998); and the Biological Opinion for Endangered Species Act Section 7 Formal Consultation would be followed. In addition, the PACFISH amendments add further interim management direction in the form of Riparian Management Objectives (RMOs), Riparian Habitat Conservation Areas (RHCAs) and standards and guidelines.

A. Direct and Indirect Effects To Water Quality

Alternative 1 – No Action Alternative

Under this alternative, the proposed action would not be implemented, and existing conditions would continue. As a result, the draw bottom road along Corral Creek would remain, and the chronic source of sediment to Corral Creek and the South Fork of Catherine Creek would persist. Fish passage throughout Corral Creek would not be restored. Riparian areas along Corral Creek and the South Fork of Catherine Creek would still be occupied by a roadway and would not be restored resulting in reduced levels of future recruitment of large wood to streams. Stream habitat for fish would not be enhanced by large wood placement and culvert removal in Corral Creek. Road surface and drainage upgrade would not occur on road segments proposed for reconstruction, and road surface erosion would continue to add to chronic sources of sediment to Corral Creek. In addition, the livestock exclosure on Pole would not be constructed.

Alternative 2 – Proposed Action

The environmental baseline for Sediment/Turbidity/Substrate Embeddedness will be maintained at the current level.

Sediment sources to streams from project implementation include in-stream culvert removal from Corral Creek, road removal (contouring/obliteration) adjacent to Corral Creek, and large wood placement with an excavator in Corral Creek. Although there will be a short term adverse effect to this indicator, there will be a long term beneficial effect.

Culvert removal will have a direct, short term (<24 hours after replacement) effect on water quality. Foltz et al. (2008) studied sediment concentrations and turbidity changes during culvert removals. The study found that 95% of the culvert related sediment occurred in the first 23 hours after culvert removal in streams where flows were low. In Corral Creek and the South Fork of Catherine Creek, sediment concentrations and turbidity should return to preconstruction levels within 2-24 hours after removal. Culvert locations in Corral Creek are at stream mile 0.05, 0.15, and 1.0 miles. Approximately half of Corral Creek downstream of the uppermost culvert could have effects to water quality and substrate. These effects will likely be greater within 100 meters of culvert removal sites since sediment concentrations are greater. Sediment concentrations and effects from sediment in the South Fork of Catherine Creek will likely be shorter duration and less distance downstream since Corral Creek provides approximately 10% of the flow to the South Fork and effects will be diluted compared to Corral Creek.

Ground disturbance adjacent to Corral Creek from culvert removal and road contouring will result in a short term increase (< one year) in sediment yield. In the long term (> one year) soils would begin to revegetate and stabilize. This is based on a road decommissioning study with ground disturbance adjacent to streams. A study conducted by Hickenbottom (2000) showed that recently recontoured road segments produced significantly more sediment than road segments recontoured 12 months prior to analysis. Road removal creates short-term disturbances that can temporarily increase sediment loss, but in the long term may reduce chronic erosion. As the slope becomes revegetated erosion levels eventually mimic natural slope conditions.

Decompaction of soils would result in an increase in soil infiltration, decrease in overland flow from the hardened road surface, and facilitate revegetation of the treated roadbed. Roads are compacted during road construction and are additionally compacted by vehicle traffic (Hickenbottom 2000). Compaction limits water movement, soil aeration, restricts root growth, and disrupts nutrient dynamics. In severely compacted soils, infiltration is essentially zero, and establishing vegetation can be difficult (Luce and Cundy 1994).

New road construction is generally greater than 300 feet from the South Fork of Catherine Creek and Corral Creek although the convergence with the abandoned Corral Creek road is between 100 and 300 feet from Corral Creek. The newly constructed road will also cross one Category 4 stream (intermittent non-fishbearing). The new road will be constructed when the intermittent stream is dry. Best management practices for new road construction will minimize sediment yield to streams. The increase in sediment yield from new road construction will be far less than restoration actions in and along Corral Creek, and will likely be non-measureable. There will be a long term decrease in sediment yield and beneficial effect to the indicator with new road construction since the portion of Corral Creek road that was a chronic source of sediment to Corral Creek and South Fork of Catherine Creek will have been removed.

Approximately 0.8 miles of road along the South Fork of Catherine Creek and 0.5 miles of road along Corral Creek will be reconstructed. Research on the effects of forest roads has shown that forest roads can result in accelerated erosion and water quality impacts (Grace and Clinton, 2007). These problem roads have the potential to cause accelerated erosion losses and mass failures, which may lead to sediment introduction into forest water bodies (Luce et al., 2001). Swift (1984) investigated the influence of graveled, ungraveled, and grassed road surfaces on soil erosion. The study concluded that the graveled road surface with vegetated sideslopes have the lowest soil loss compared to ungraveled and grass road surfaces. Designs proposed to minimize the impacts of forest roads have a common element, which is runoff control (Grace and Clinton, 2007). The objective of runoff control is to direct water from the road prism at a non-erosive velocity, which reduces the energy of storm runoff and its ability to detach and transport soil particles. Road reconstruction and runoff control includes broad-based dips, outsloping, graveling or rocking of the road surface, brushing, installing or replacing ditch relief culverts, cleaning culvert catch basins and ditches, blading of the road surface, building of the roadbed, and clearing and grubbing for widening and turnouts. Best management practices for road reconstruction will minimize sediment yield to streams. Ground disturbance associated with road widening may reach Corral Creek. Within one year, soils will stabilize and sediment yield from road reconstruction will be reduced.

Planting and fence construction is not a source of sediment yield to streams. There is very little ground disturbance associated with these activities. A non-measurable amount of sediment will reach streams as a result of planting and fence construction.

Effects to fish habitat from an increase in sediment yield will occur after treatment of the roadbed, culvert removal, and to a smaller extent large wood placement. Short- term effects such as localized increases in fine sediment in gravels or along channel margins may be seen. However, substrate quality would not decrease over time, and a long term (>one year) reduction in sediment and beneficial effect to substrate, water quality, and stream temperature will occur from the project**.**

Stream Temperature: There would not be any noticeable changes to stream temperature. Some vegetation removal, in the riparian area, would occur due to road obliteration. The amount of vegetation removed would have negligible effects on stream temperature. In the long term, there is potential for decreased summer stream temperatures, due to increased floodplain connectivity, increased riparian vegetation, narrowing of the existing channel, and improved meander widths.

Flow Regimes: Short term effects to the flow regime are expected to be negligible. In the short term, this project would not alter vegetation to the point that any change in the flow regime would occur. However, in the long term, it is expected that the flow regime would positively change. The floodplain would me more capable of handling and dispersing large peak flows, increasing the potential to safely store water for safe release during the low flow periods. Increased vegetation within the floodplain, through plantings and natural recruitment, would also provide the potential for increased water storage. As a result, it is expected that the flow regime would be beneficially affected by this project.

B. Direct and Indirect Effects on Fish Habitat and Populations

Alternative 1 – No Action Alternative

Under this alternative, the proposed action would not be implemented, and existing conditions would continue. As a result, the draw bottom road along Corral Creek would continue to contribute sediment to Corral Creek and the South Fork of Catherine Creek. Fish passage throughout Corral Creek would not be restored. Riparian areas along Corral Creek and the South Fork of Catherine Creek would still be occupied by a roadway and would not be restored resulting in reduced levels of future recruitment of large wood to streams. Instream habitat for fish would not be enhanced by large wood placement and culvert removal in Corral Creek. In addition, the livestock exclosure on Pole Creek would not be constructed allowing livestock access which contributes to streambank trampling, sedimentation, and impacts to riparian vegetation.

Alternative 2 – Proposed Action

Direct effects to listed fish species from the implementation of the Corral Creek project may occur as a result of culvert removal and large wood placement in Corral Creek. Due to the complete fish barrier at the mouth, it is believed that there currently is no summer steelhead residing in Corral Creek. However, removal of the culvert at the mouth of Corral Creek could have direct effects on summer steelhead juveniles, spring Chinook salmon juveniles, and bull trout juveniles and adults at the mouth of Corral Creek which is very close to the South Fork of Catherine Creek.

Summer steelhead adults will be absent since they spawn in the spring typically through the month of May. Steelhead adults will not be affected by the project.

According to Streamnet the South Fork of Catherine Creek provides 4.7 miles of spawning habitat for spring Chinook salmon. The Oregon Department of Fish and Wildlife (ODFW) have conducted Chinook salmon spawning index surveys on the South Fork of Catherine Creek since 1967. The Index Area begins at the mouth of the South Fork and extends upstream for 2.0 miles. This two mile index area covers the primary spawning habitat for Chinook in the South Fork of Catherine Creek. Supplemental

surveys upstream of the 2.0 mile index area have not found any spawning activity. Corral Creek is at approximate river mile 4.5 on the South Fork of Catherine Creek. The risk to spring Chinook adults is low.

Bull trout adults are present in the South Fork of Catherine year round. Direct effects to bull trout adults are considered high since bull trout could potentially be present at the mouth of Corral Creek.

Direct effects to steelhead, bull trout, and spring Chinook juveniles is considered high since their presence at the mouth of Corral Creek is considered high.

There will not be any direct effects to redds of any of the three listed species since instream activities are conducted during the in-stream work window.

Riparian Management Objectives (RMOs)

Landscape-scale interim RMOs describing good habitat for anadromous fish were developed using stream inventory data for pool frequency, large woody debris, bank stability, and width to depth ratio. State water quality standards were used to define favorable water temperatures.

RMOs are as follows:

Table 3. Riparian Management Objectives

Habitat Element	RMOs								
Pool Frequency (varies by wetted width)	Wetted width in feet Number of pools/mile	10 96	20 56	25 47	50 26	75 23	100 18	125 14	150 12
Water Temperature	Compliance with state water quality standards, or maximum <68F								
Large Woody Debris	>20 pieces per mile; >12 inches diameter; 35 foot length								
Bank Stability	>80% stable								
Width/Depth Ratio	<10, mean wetted width divided by mean depth								

Pool Frequency

All streams surveyed were well below the RMO for pools/mile at the time of the survey (Table 3).

Water Temperature

Three stream temperature monitoring sites are located near the project area (Table 4). Years missing can be attributed to an error in the data resulting in unusable information or the site was not monitored that year.

Table 4. Results of stream temperature monitoring within the Corral Creek project area

Location	Maximum Weekly Average Temperature (F^0)							
	2005	2006	2007	2008	2009	2010	2011	2012
Pole Creek @ mouth	61.1	60.0	*	56.8	59.0	57.5	56.7	59.0
S Fk Catherine Cr @ Pole Cr	57.0	59.0	*	54.6	57.1	55.1	54.4	57.0
S Fk Catherine Cr @ mouth	63.8	*	66.7	70.9	62.7	61.4	*	63.1

*=Error in data resulting in unusable information (i.e. equipment failure, program malfunction, lost or stolen)

The Oregon Department of Environmental Quality (ODEQ) state water quality standard is based on the maximum 7-day running average. Temperature standards were developed based on temperature requirements of salmonids during different seasons and life stages.

There is one stream temperature standard applicable to ESA streams in the Corral Creek project area. The applicable temperature standard is that water bodies must not be warmer than 53.6ºF for bull trout spawning and rearing.

Pole Creek and the South Fork Catherine at the mouth exceeded the temperature standard for bull trout spawning and rearing. The South Fork of Catherine Creek at Pole Creek approached the temperature standard in 2008 and 2011.

Bank Stability

The South Fork of Catherine Creek met the PACFISH RMO of > 90% stable streambanks (Table 3). Streambank stability in Corral Creek is slightly lower than the RMO with 89.9% stable streambanks. There is no streambank stability data for Pole Creek.

Width to Depth Ratio

Pole Creek met the PACFISH width to depth ratio of <10 (Table 5). The width to depth ratios for the remaining two streams exceeded the PACFISH width to depth ratio of <10. However, the width to depth ratios for these two streams is within the expected range of Rosgen stream types (Rosgen, 1996). Table 5 below compares width to depth ratios with expected width to depth ratios described for Rosgen stream types.

Table 5. Width to depth ratio for streams surveyed within the project area, and width to depth rations described for Rosgen stream types.

Rosgen Channel Type	General Rosgen Width to Depth	Average Rosgen Width to Depth for Channel Type	Range Rosgen Width to Depth Ratio	Stream Name	Width to Depth Ratio
B3	>12	18.8	11.7 to 38.0	S Fk Catherine	13
B4	>12	17.0	10.7 to 36.7	Corral Creek	12

Large Woody Debris (LWD)

All three streams exceeded the standard of > 20 pieces of large wood per mile (Table 1).

This project would directly enhance the amount of LWM per mile. LWM placement into Corral Creek would add approximately 150 pieces of primarily medium and large pieces to approximately 1.75 miles of stream. The addition of the LWM would have the potential to increase pool frequency and decrease the width/depth ratio in the long term. Bank stability is 90% stable. Bank stability could be affected in the short term, due to equipment operation within the channel and on the streambanks. However, the bank stability is not expected to be reduced more than 1% less than current conditions. In the long term, bank stability would be near current conditions. Therefore, this project would positively affect the RMOs for LWM, pool frequency, and width/depth ratio.

Throughout the project area, PACFISH riparian goals would be met. These goals are to maintain or restore:

1. Water quality;
2. Stream channel integrity, channel processes, and the sediment regime;
3. Instream flows to support healthy riparian and aquatic habitats;
4. Riparian vegetation to provide an amount and distribution of LWM characteristic of natural aquatic and riparian ecosystems; provide adequate summer and winter thermal regulation within the riparian and aquatic zones; and help achieve surface rates of erosion, and channel migration characteristic of those under which the communities developed.

This project would improve and enhance the above goals for PACFISH through road obliteration and relocation, road storm proofing, floodplain restoration, plantings, and LWM additions. Some vegetation removal in the riparian area would be needed to obliterate and recontour the draw bottom road adjacent to Corral Creek. However, existing vegetation would be avoided as much as possible and trees used for LWM input would be thinned out of dense stands. In addition, the riparian area would be planted. The amount of vegetation removed is presumed to have minor effects on riparian vegetation in the short term and would be positive in the long term. In the long term, it is expected that water quality and instream flows would be improved through a connected, accessible, and functioning floodplain that would adequately store water for safe release throughout the low flow period.

Cumulative Effects for Fisheries and Watershed Resources

Potential cumulative effects are analyzed by considering the proposed activities in the context of past, present, and reasonably foreseeable future actions. Reasonably foreseeable future actions are defined as activities that will occur within the next 5 years. For this project, activities are considered within in the South Fork Catherine Creek (170601040502) subwatershed analysis area and are described in Appendix D of this EA.

Alternative 1 – No Action Alternative

No cumulative effects would occur from the no action alternative.

Alternative 2 – Proposed Action

Fire and Fuels - Wildfires have contributed to cumulative effects in the past and have the potential to do so in the future. There have been no major wildfires within this subwatershed for the past 5 years. Past wildfires have caused increased sediment

delivery through rainstorms that occurred after the wildfire burned. The fuels program involves prescribed fire and fuel reduction projects. These projects are designed to lessen the impacts of wildfire. There are several prescribed fuel reduction projects planned in the subwatershed which may cause increased spikes in sediment contribution to the stream channel. In addition, fire rehabilitation efforts have increased to reduce effects of wildfire to fisheries and watershed resources. There is a potential for a short term burst of sediment from implementation of this project which could be in combination with potential sediment from wildfires in the area. Implementation of the Sandbox project has the potential to reduce fire behavior and fire size and potential sediment. Therefore, cumulative effects from fire and fuels will be beneficial due to mitigation activities.

Timber harvest - Pre-commercial thinning activities are planned in Upper Catherine TSI from 2013-2018. A total of 1,404 acres will be treated including 513 acres of hand thinning within RHCAs. Trees will be removed from the road relocation area by uprooting them with an excavator. More on-site trees will be uprooted for use as large woody debris in Corral Creek. Activities of this nature may contribute short term sediment delivery potential to the stream channel. Efforts to accelerate revegetation of these affected areas by planting native grass seed and tree seedlings will shorten the time frame of these effects. RHCA no activity buffer widths in harvest units in the Sandbox project would stop sediment from reaching streams; therefore, there would be no measurable cumulative effects from timber harvest in this project area.

Livestock Grazing - There is a livestock grazing allotment within the project area. Normal grazing season is 6/16 – 10/15. The allotment is in non-use status for the period of 2012-2014. It is expected that grazing will resume for the 2015 season. A livestock exclosure fence would be constructed on a high access section of Pole Creek. The existing exclosure fence on Corral Creek would be retained and refurbished. A very small portion of Pole Creek would be restricted from livestock grazing while protecting a sensitive riparian habitat area. The effect will be beneficial overall.

OHV Use - A Travel Management Plan will potentially become enacted by 2016. This project will manage cross-country motor vehicle use and designate roads, trails and areas for public motor vehicle use. It will not physically close any roads – closures will be by an motor vehicle use map (MVUM). It is possible that some roads may become designated OHV trails under Travel Management.

Recreation - This area is heavily used by firewood gatherers. Access through the area will be intermittently restricted for 3 day periods during road reconstruction activities. Access will be open during the weekends. The Sand Pass Trailhead parking areas provides parking for vehicles and stock, as well as areas for camping. Access to the trailhead will not be interrupted by the project implementation. A rustic cabin located in Taylor Green is accessed by snowmobile recreationists in the winter. Rerouting the road out of the stream bottom and placement of boulders and large wood in combination with the Travel Management Plan (TMP) which will manage off road vehicle use and firewood cutting should reduce user built roads for firewood cutting and sediment impacts from them.

Roads/Access - A draw bottom road, which is a chronic source of sediment to Corral Creek and South Fork Catherine Creek, would be obliterated and moved to the uplands. Three culverts impeding fish passage will be removed. Six culverts will be replaced or removed to improved drainage. Retained roads will be resurfaced. These actions will

improve access for the purpose of resource management and public use. There will be intermittent road closures of up to three days during road reconstruction activities between mid-June and mid- September 2014. Through roads will be opened on weekends. Road maintenance work is an ongoing activity on the Forest Service road system. Actions are primarily within the road prism including blading, some rock replacement, brushing, culvert cleanout, ditch cleanout. Improving closures of some roads in the Sandbox project in combination with obliterating and relocating the road in this project and implementation of the TMP would decrease sediment from closed roads and roads where the objective maintenance level is closure.

Fisheries and Watershed Restoration Projects - This enhancement project in combination with the instream wood placement planned on Pole Creek would improve instream habitat and protect riparian habitat from grazing impacts within the subwatershed. These activities will contribute to beneficial cumulative effects by increasing water quality, enhanced fish habitat, and increased fish habitat accessibility.

Private Land Activities - In general, the private lands adjacent to the National Forest consist of forest and grasslands that are used for private residences and forest management. Forest management has generally been a mixture of even/uneven-aged management providing a variety of seral structures and stages. It is anticipated that these management procedures would continue into the foreseeable future. Private lands adjacent to the project area primarily have spring and summer cattle grazing. It is anticipated that these management procedures would continue into the foreseeable future. Use of roads on private land would continue.

Conclusion

Cumulative effects occur in the watershed due to impending precommercial thinning, wildfire preventative measures, road reconstruction and maintenance, stream restoration projects, livestock grazing, and private land activities. In the long term, the Corral Creek Road Relocation and Restoration Project would improve cumulative effects on populations and habitat. There is potential for a slight increase in cumulative effects from this project in the short term.

There are measurable cumulative effects concerned with the factors of roads, livestock grazing, and riparian habitat condition. These are overall beneficial effects.

Water Quality Compliance Statement, Floodplains and Wetlands Executive Orders

Compliance Statement

The Corral Creek Road Relocation and Restoration Project would not degrade water quality in the long term. The project would have the potential to increase sediment delivery in the short term. The effects would be minimized through operating out of the stream channel as much as possible, limiting the amount of stream crossing, implementing a spill prevention plan, location of staging areas at least 300 feet slope distance from the stream. After two years, it is expected that the road relocation, changes in floodplain function, riparian vegetation growth, and road obliteration would decrease sediment delivery potential when compared with current conditions. Therefore, this project would not have adverse effects through activities that affect this parameter.

Floodplains, Executive Order 11988

Executive Order (EO) 11988 requires the Forest Service to "avoid to the extent possible the long and short term adverse impacts associated with the occupation or modification of floodplains. This project would benefit the floodplain by connecting it back to the stream and watershed.

Wetlands, Executive Order 11990

Executive Order (EO) 11990 requires the Forest Service to "avoid to the extent possible the long and short term adverse impacts associated with the destruction or modification of wetlands". This project is consistent with this EO because wetlands would be avoided and historic channel scrolls/side channels would be protected.

Effects to Listed Fish, Fish Habitat, and Sensitive Fish Species

The following discloses the effects to proposed, endangered, threatened and sensitive (PETS) species and their critical habitat within the project area.

Direct, Indirect, and Cumulative Effects for PETS Fish Species

Alternative 1 – No Action

The No Action Alternative May Affect, but is Not Likely To Adversely Affect spring Chinook salmon or their designated critical habitat, bull trout or their designated critical habitat, or summer steelhead or their designated critical habitat. Existing conditions would continue. As a result, the draw bottom road along Corral Creek would remain, and the chronic source of sediment to Corral Creek and the South Fork of Catherine Creek would persist. Fish passage throughout Corral Creek would not be restored. Riparian areas along Corral Creek and the South Fork of Catherine Creek would still be occupied by a roadway and would not be restored resulting in reduced levels of future recruitment of large wood to streams. Stream habitat for fish would not be enhanced by large wood placement and culvert removal in Corral Creek. Road surface and drainage upgrade would not occur on road segments proposed for reconstruction, and road surface erosion would continue to add to chronic sources of sediment to Corral Creek. In addition, the livestock exclosure on Pole Creek would not be constructed.

The No Action Alternative may impact redband trout individuals or habitat for this species, but is not likely to contribute to a trend towards federal listing or cause a loss of viability to the population or species.

Alternative 2 – Proposed Action

Implementation of the Corral Creek Road Relocation and Restoration Project may impact spring Chinook salmon or their designated critical habitat, bull trout or their designated critical habitat, summer steelhead or their designated critical habitat, and redband trout or their habitat for the short term (2 years or less). Potential impacts could include sediment delivery and harassment. In addition, there is a very low risk of fuel spillage within or directly in the stream, although, mitigation measures are in place to prevent fill spillage.

In the long term, project results would substantially improve and benefit populations, habitat and watershed function within the project area for listed fish species.

Rangeland Resource

Affected Environment

The boundaries for the Corral Creek project lie entirely the Pole Creek C&H allotment on the La Grande Ranger District. The allotment has a current allotment management plan (AMP), completed in 2011. Portions of the Big Creek C&H allotment lie within the South Fork Catherine subwatershed analysis area but will not be impacted by the proposed action and will not be discussed any further in this document.

Pole Creek C&H Allotment

The 11,280 acre Pole Creek cattle allotment is permitted for 145 cow/calf pairs from June 16 to September 15. The allotment grazing system is a single, season long use pasture through which the cattle are moved through the allotment with a combination of herding, salt drift fences, exclosure fences and eight developed water sources (Table 6).

Table 6. Allotments within the Corral Creek project area.

Allotment	Type	Total Allotment acres	Allotment acres within the Corral Creek Project area	Allotment Season of use
Pole Creek	Cattle	11,280	6,793	6/16-9/15

See the current annual operating instructions for specific standards and objectives. The project area boundary lies within the south central portion of the allotment. The Pole Creek permittee has entered into a three year resource protection non-use agreement from 2012-2014. No livestock will be placed on the allotment during this period.

Permitted Use on the Pole Creek Allotment

Permittee Name	Permitted Number	Season of Use	Livestock Type	Permitted HM/AUM	Permit Type
Lay	145	6/16-9/15	Cow/Calf	578/763	Term

Authorized Use for the Pole Creek Allotment in 2012-2014

Permittee Name	Authorized Number	Season of Use	Livestock Type	Authorized HM/AUM	Permit Type
Lay	0-Non Use	6/16-9/15	Cow/Calf	0/0	Term

Forest and Rangeland Vegetation

The Pole Creek allotment within the Corral Creek project area is located within the Wallowa mountain range. Elevations range from 4000 feet to 6500 feet. Precipitation averages 20-40 inches annually of which most comes in the form of winter snows.

The soils are generally Columbia River basalts covered in many locations with volcanic ash deposits on the west and southern portion of the project and granitic/ash soils on the northeast portion of the project area. These ashy soils are commonly the most productive growing sites for forest vegetation (Fryxell, 1965). Forest vegetation includes open and closed mixed conifer stands, upland shrubs, dry meadows, moist meadows and areas of conifer regeneration. Conifer stands are interspersed with rocky, grass covered slopes; dry meadows; and moist meadows usually associated with a riparian area. Forestlands are defined as those areas with at least 10% canopy cover.

Dominant plant communities within the forested type include Douglas-fir/snowberry, Ponderosa pine/Idaho fescue, Grand-fir/big huckleberry, with a variety of shrubs and grasses intermixed depending on the soil type, aspect, and density of the forest canopy. Upper elevation plant communities transition to subalpine fir and lodgepole/grouse huckleberry.

Riparian plant communities are generally Douglas-fir/Common Snowberry, Grand-fir/Common Snowberry and Mountain Alder and Red-osier Dogwood in the lower reaches of South Catherine Creek.

Past timber harvest activities included post-harvest seeding with non-native perennial grasses, which are still present today. The area also supports isolated areas of annual grasses.

Where limited or no canopy exists, rangeland types are predominately shrub-grassland plant communities and include species such as snowberry, needle and thread, bluebunch wheatgrass, Idaho fescue, Sandberg's bluegrass, prairie Junegrass, and onespike oatgrass and a variety of forbs such as mountain pea, lupine, yarrow, and arrowleaf balsamroot.

Portions of the analysis area have been observed to be colonized with the invasive annual African wiregrass (Ventenata dubia). This annual is unpalatable to wild ungulates and livestock. Its spread across the Blue Mountains province has been rapid and unchecked. Ventenata is found in areas with shallower soils which are inundated with water in early spring but dry out as the season progresses. Range condition seems to be irrelevant to Ventenata as it is found in healthy bunchgrass stands as well as areas of disturbance and poor range condition.

The project area has been and continues to be grazed by wild ungulates (elk and mule deer). Many portions of the project area have been grazed by domestic livestock since the early 1900's. Effects from livestock can be similar to those of wildlife. While some effects of livestock grazing are considered acceptable and/or desirable, concentrated use or use that occurs in the same areas year after year can have undesirable effects.

The Pole Creek allotment within the analysis area has small to medium sized (10-500 acres) stands of rangeland vegetation within much larger expanses of forested landscapes, primarily Ponderosa pine and grand fir/ mixed conifer overstory vegetation.

Transitory Rangeland

Many areas within the project area have experienced extensive timber harvest, most recently in the early 1990's. Following this harvest activity, many new roads were constructed and have remained open, allowing livestock access to areas previously inaccessible due to dense vegetation.

This harvest also allowed for the development of transitory rangeland where forage grasses and shrubs became established in areas that had previously been under closed forest canopy.

Transitory range is defined as "forested lands that are suitable for grazing for a limited time following a complete or partial forest removal" (Spreitzer 1985). The increased forage production made available as a result of past forest management that reduced overstory shading, has allowed for distribution of livestock over a larger area within the allotment boundaries (Hedrick D.W. 1975). The forage produced following development of transitory range is highly variable depending on site conditions.

Transitory forest range is temporary and becomes less productive as the trees regenerate. Forage production for livestock can be expected to peak from a few years to perhaps 20-30 years after logging. Grass and forb production peaks earlier than shrub production (Bedunah and Willard, 1987).

Through tree regeneration, this condition has been gradually reverting back to a closed canopy forest and would result in reduced forage production over these portions of the allotments. This has resulted in increased reliance by livestock on higher production riparian areas and those timber stands with less than 60% canopy closure.

Proposed prescribed burning and future maintenance burns would allow retention of understory vegetation released during forest thinning projects. Many of the mixed conifer stands within the project area are outside the historic level of canopy closure expected in a stand where natural fire cycles would have reduced stems per acre and allowed for full canopy closure, precluding maintenance of understory grasses and shrubs.

Effects of Implementation

Direct and Indirect Effects

Alternative 1

There are no known direct effects on range resources as a result of the No Action Alternative. Effects related to this alternative on range resources are primarily indirect in nature.

Indirect effects of the No Action Alternative would be continued access by livestock into areas proposed for protection in Alternative 2. Removal of road prisms, placement of LWM and fencing will help reduce this access, which once livestock are within a riparian area, can result in streambank destabilization and sedimentation into the streams.

Alternative 2

Direct effects due to recontouring the previously closed roads within the project area would be a potential decrease in livestock use of the previously closed roads. This would

prevent livestock access to areas where easy travel had been permitted via the abandoned road prism adjacent to upper Corral Creek.

As outlined above, the drawbottom roads proposed for obliteration lead towards riparian areas where reduced livestock grazing has been identified as a need to meet management objectives. The removal of these roads will indirectly affect these areas by reducing livestock grazing pressure and allowing increased protection of riparian vegetation and streambanks. Direct protection of streambanks would be provided by placement of LWM and fencing. Indirect stabilization would result from increased shrub and herbaceous vegetation production.

There would be no measurable direct effect on rangeland resources following road construction or reconstruction activities.

Cumulative Effects

Alternative 1

Livestock distribution and forage available for utilization would remain consistent with existing management. Potential improvements in control of livestock access made possible through closure of access points within Corral and Pole Creek would not occur. Overall cumulative effects would be very minimal.

Alternative 2

Appropriate management of the NFS lands should allow for retention of soil in the upper watersheds and reduce the potential for movement of sediment above what would be expected in near natural systems. This project and the other fisheries enhancement projects in the project area would improve the ability to manage grazing and meet management objectives on the allotment.

Transportation Resources

Affected Environment

Forest System Road 7700600 (FSR 7700600) is a maintenance level II road, intended for high clearance vehicles, and connects Forest System Road 7700000 (FSR 77) and 7787000 (FSR 7787). Both FSR 77 and FSR 7787 are high use roads. FSR 7700600 contains segments of crushed rock and native surfacing and is located within the draw bottom of Corral Creek. The road is currently poorly maintained and contributing sediment to Corral Creek and South Fork Catherine Creek during spring runoff.

Effects of Implementation

Direct, Indirect, and Cumulative Effects

Alternative One – No Action

FSR 7700600 would not be moved out of the draw bottom and improved under this alternative. Negative effects to aquatic resources would continue and the road would not receive necessary maintenance.

Alternative 2 – Proposed Action

This alternative would realign approximately 1800 feet of native surface, draw bottom road. Rebuilding this segment on the hillside using the latest Best Management Practices (BMPs) would minimize sediment delivery to nearby streams. Project activities consist of 1800 feet of new road construction, installation of 5 culverts, placement of rock surfacing, removal of 4 culverts, and obliteration of existing road. The project will also maintain some of the worst segments of the existing road on either side of the realignment by cleaning culverts, performing brushing, reconditioning the roadbed and placing spot rock. These maintenance activities have been proven to reduce the ecological impact of roads on aquatic systems. FSR 7700600 will be a connector haul route for the upcoming Sandbox Timber Sale. By making sure the road is constructed to withstand both commercial and recreational traffic, negative cumulative effects of this project, the Sandbox Timber Sale, and ongoing commercial and recreational activities will be minimized.

Road maintenance performed with this project and in adjacent projects and would improve the condition of roads for travel, safety, and resource protection.

Forest Plan Compliance

Implementation of this project ensures compliance with the Wallowa-Whitman Forest Plan Transportation System goals, standards, and guidelines (Forest Plan pp. 4-34 through 4-36). This project will provide for safe, efficient, environmentally sound access for the movement of people and materials involved in the use and management of these National Forest lands.

Soils

Introduction

The following is an analysis of the effects on soil resources of the activities proposed in the Corral Creek Project. The analysis area for this analysis is the for the 15,343 project area. Additional specific information and analysis related to soil quality and productivity is located in the specialist report in the Corral Creek analysis file.

Affected Environment

Soils in the Corral Creek project area developed over layers of basalt, andesite, volcanic breccias, and Columbia River bedrock. These soils vary greatly and may range from those on thin, rocky, low-productivity ridgetop scablands to those in deep ash accumulations on very productive grand fir sites. In the majority of the area the soil is buried under a mantle or cap of volcanic ash deposited from the eruption of Glacier Peak (12,000 years ago) and Mount Mazama (6600 years ago).

Soils with a high amount of ash in surface horizons are common in the project area, ranging from relatively thick to non-existent. Ash-cap soils derived from volcanic eruptions are most often classified in the silt or sandy loam categories. They are also characterized by low bulk density, high porosity, and high water holding capacity. They tend to be non-cohesive and because of their relatively low strength, are highly susceptible to compaction (Johnson, Page-Dumroese and Han 2007). Ash-cap soils can be susceptible to disturbance during forest management, and strategies to predict compaction, displacement and erosion hazards are essential for planning forest management operations (Curran, Green and Maynard 2007). Soil depth, combined with the depth of the unconsolidated material lying over bedrock in the project area ranges from very shallow (less than 10 inches) to deep (40-60 inches). The surface soil layer is the layer that supports the root zone for fine and medium size roots.

Soils with an ash mantle commonly have a different surface texture than the material buried beneath the ash. Typically, soil textures in the project area are silt loams with varying rock content. Subsurface layers in the project area are generally rockier than surface layers. In general, soils consist of basalt or andesite parent material with a volcanic ash-cap over colluvium and residuum.

Soils information for this analysis was obtained and interpreted through data collected by the NRCS Soil Data Mart website and the WWNF Ecological Unit Inventory (EUI). The EUI, which meets the standards of the National Cooperative Soil Survey, describes soil map units, their individual components, and provides interpretive information on soil use and management.

Soil Description

In the Corral Creek project area, soils within the treatment units occur within one Land Type Associations (LTA). LTAs are a product of the interaction between soils, geology, landforms, vegetation and climate. For this project, soils are described in relationship to the LTAs where they occur (Table 7). Erosion hazards are considered low to moderate when vegetated

Table 7. Landtype Association Description

Land Type Association	Geology	Landform	Sediment Delivery Efficiency	Soil Erosion Risk without Vegetation	Vegetation	Erosion Hazard with Vegetation	Landslide Hazard with Vegetation	Project Acres
217	Basalt	Mountain Slopes, Steep	M	H	Dry Forest	Moderate	Low	1660

Soil erosion is a natural process that can be accelerated by land management activities; it depends on soil texture, rock content, vegetative cover and slope. Ash soils have higher soil erosion hazard ratings than other soils because of their low bulk density and high detachability. This can be ameliorated by operating on slopes less than 30% with good vegetative cover. Vegetation binds soil particles together with roots, and vegetative cover – including biological crust and duff – protects the soil surface from raindrop impact and dissipates the energy of overland flow.

Individual soils found within the Corral Creek project area along with soil properties of erodibility (Kw factor) and compaction potential (bulk density) were assessed from data available from the NRCS Soil Data Mart website. Surface soils within the project area range from 0 to 25 inches deep, with the total depth to bedrock ranging from 0 inches at the rock outcrops to greater than 60 inches.

Most of the dominant soil complexes are ash mantles covered or ashy silt loams and have a high inherent compaction potential. Compaction potential increases when rock fragments within the soil decreases.

The inherent erodibility of soils is calculated in a laboratory in the absence of live vegetation or effective ground cover and is based on soil texture and detachability, not slope gradient.

Sheet and Rill Erosion

Soil erodibility is a function of cohesion, infiltration rate, permeability of lower horizons, uniformity of slope and slope percent, water concentration potential, distribution of annual precipitation, rainfall intensities, soil temperatures, and the density of effective ground cover before and following disturbance. Soil erosion is a natural process that can be accelerated by land management activities. Soils on steep slopes with poor vegetative cover and lack of structural development are more susceptible to erosion than are soils on flatter terrain. Vegetation protects the soil surface from raindrop impact, dissipates the energy of overland flow, and binds soil particles together.

Gully and Landslide Erosion

The project area is generally a stable landscape and the potential for landslides to occur is relatively low with some moderate potential on steeper slopes (Table 8). When vegetated, the soils and geology in the project area are not prone to mass movement. There no know landslides within the Corral Creek project area.

Soil Compaction and Displacement

In the Sandbox project area soil compaction is a primary disturbance factor affecting soil productivity. Skid trails, landings and non-surfaced roads, ATV trails, livestock trails and dispersed campsites all have led to increased soil compaction and bulk density throughout the project area.

Soil displacement is the movement of soil from one place to another by mechanical forces and is typically associated with roads, landings, and skid trails. Effects include reduced water holding capacity, loss of ground cover, nutrients and soil microorganisms, and increased runoff due to an increased amount and condition of bare ground exposed (Page-Dumroese et al 2007.

Detrimental Soil Conditions

The Forest Plan defines detrimental soil condition as any management practice that results in soil compaction, puddling, displacement, erosion, mass wasting, or severe burning. Soil damage can negatively affect the productivity of a site. Generally speaking vegetative, forest floor, and soil process appear to be functioning properly in the majority of the project area. Residual soil disturbance is limited due to the topography and the ability of the soil and vegetation to recover following disturbance in this area.

The majority of soil compaction occurs on the existing system haul roads, which are reletively abundant in the area due to the steep slopes in the project area.

Soil displacement is defined as the movement of soil from one place to another by mechanical forces such as a wheel, blade or animal hoof. Evidence of surface soil displacement by mechanical disturbance is relatively limited within the Corral Creek project area**.** The majority of soil displacemnt occurs on old haul roads, which are reletively abundant in the area due to the steep slopes in the project area.

The total existing percent detrimental soil conditions (DSCs) in the project area attributable to roads is displayed in Table 8. DSCs at the project scale was derived from the measuring the existing road prisms within the South Fork Catherine Creek subwatershed. Existing road acreage was reached by multiplying the miles (converted to feet) of road by a 25 ft. width and dividing by 43,560. The total acres of DSC's attributable to roads is 1.49 % which meets the forest plan direction of less than 20% DSCs for any proposed project area.

Table 8. Total Existing Road DSCs within the South Fork Catherine Creek subwatershed.

All Roads Maintenance Level 1-3	Existing Roads (Miles)	Existing Road DSC (Acres)	Watershed Acres	Total Existing Watershed DSCs attributable to roads (%)
Level 1	43.38	131.45		0.86
Level 2	25.82	78.24		0.51
Level 3	5.97	19.09		0.12
Total	**76.76**	**228.78**	**15,343**	**1.49%**

Effects Analysis

Assumptions

Effects to soils can be short-lived (one to three years) in the case of erosion potential; soil erosion potential depends on soil type and vegetative cover to determine how long risk of erosion is a concern. Erosion control measures normally occur immediately following treatments and / or re-vegetation occurs in the first year or two. Other effects to soils such as compaction, rutting, and displacement tend to be longer term impacts that are cumulative in nature if these types of impacts have not fully recovered when new activity occurs in the same location.

Management activities can result in direct, indirect and cumulative effects on soil productivity and soil stability (USFS 1998). Effects may be positive or negative. Effects may include alteration of physical, chemical, and / or biological characteristics or properties of soils. Many standard and guidelines in the Forest Plan, in addition to the five identified specifically in the soils section, relate to soil function, soil productivity and soil stability.

The most adverse effects of management activities on soils are described as detrimental compaction, detrimental puddling, detrimental displacement, detrimental burning, detrimental erosion, and detrimental mass wasting; other concerns include adverse changes in vegetation and

organic matter on the soil surface, and adverse changes in water table (USFS 1998). Soil compaction, puddling, displacement, severe burning, and impacts to ground cover (vegetation and organic matter) are direct effects; soil erosion, mass wasting, and changes in water table are indirect effects. Cumulative effects are the sum of incremental changes in past, present, and reasonably foreseeable future direct / indirect effects on the soil resource that overlap both in time and space. Recent past, ongoing, and foreseeable future effects are discussed under cumulative effects.

The *magnitude* of the effects of an activity on soil function, soil productivity and soil stability are described by the *speed*, *direction* (upward / downward*)*, *extent*, and *duration* of change. Minimizing productivity losses associated with any action can be accomplished by managing the magnitude of detrimental soil conditions (DSCs) within activity areas through prescription and/or mitigation. DSCs are to be minimized, with total acreage detrimentally impacted not to exceed 20 percent of the total acreage in the project area including landings and system roads. The project area is identified as each treatment unit for determining DSCs prior to treatment (WW interim protocol 2002). Post treatment restoration is necessary for areas that exceed this standard and guide. (LRMP 4-21).

Planned management activities must minimize new soil damage and must provide for restoration measures when and where they are appropriate (WWNF 1990, Soils S&Gs).

Cumulative effects are rated as negligible, minor, moderate or major based on professional judgment. Negligible means the effect of an activity on an indicator was so small it was not measurable, or caused a change of less than 1%, or less than 1% of an area was affected. Minor means the effect was a change equal to less than one-half of the flexibility for a standard, or 1-10% of an area was affected. Moderate means the effect was a change equal to more than one-half of the flexibility for a standard, or 11-20% of an area was affected. Major means a standard was exceeded or more than 20% of an area or resource was affected; e.g. the detrimental soil condition threshold is 20% (USFS 1998).

Roads Effects Model

Road effects are modeled for two slope positions: gently sloping ridges and benches, and moderately steep side slopes. Roads on ridges and benches would be about 12-14 feet wide, with an average disturbed area of 1.6 acres per mile. Roads on side slopes would be 20-30 feet wide, with an average disturbed area of 3 acres per mile. This is equivalent to a 25 foot wide roadway, top of cut to bottom of fill. The entire disturbed area will be treated as a DSC. (derived from Bliss, WWNF 2006)

Road Decommissioning Model

Decommissioning of a road may range from a little as pulling the carsonite sign to one or more of the following treatments: culvert removal, ripping, waterbarring, re-contouring, barrier construction, woody debris placement and seeding. Post-treatment DSCs would include the following possibilities:

a) No reduction in DSCs if the following treatments are used: sign removal, waterbars, barriers, woody debris placement and seeding. Residual DSCs are100% because all treatments would be within the roadway. Waterbars and seeding would reduce potential for future off road DSCs
b) <1% reduction in DSCs for culvert removal

c) >6-25% reduction in roadway compaction but <1% reduction in total DSCs if the roadway is ripped. Residual DSCs are greater than 99% due to soil still being displaced in the fill.
d) 80-90% reduction in DSCs if the roadway is re-contoured. Residual DSCs would equal 10-20% due to topsoil being mixed with subsoil and the inability to replicate the exact pre-road slope shape and soil depth. (Bliss, WWNF 2006)

The above models were used in analyzing potential detrimental soil compaction conditions from project activities.

In the following discussion, the degree of impact, of compaction, displacement, erosion, mass wasting, organic matter loss and drainage class change is severe enough to classify effects as DSCs. Extent is described generally as affected area and duration is noted as years. The effects outlined below are based on soil mitigation measures being implemented in full.

Direct Effects

Alternative 1

There would be no direct affect to soils from the No Action alternative as there would be no new road construction, no road reconstruction, no road decommissioning, no stream restoration and no exclosure fence constructed as a part of the alternative. LRMP standards of no more than 20% DSCs for roads within the project area would be met (Table 9).

Alternative 2

The primary direct effect of road work on soil quality is detrimental soil displacement. Table 9 summarizes the miles of road work that would occur for each alternative in the Corral Creek project. LRMP standards of no more than 20% DSCs for roads within the project area would be met (Table 8).

Table 9. Miles of Road Work and Resulting DSCs for Alternatives 1 and 2

Road Work	Alternative 1	Alternative 2
Re-countouring	0	1.13
Re-construction	0	1.3
New Construction	0	0.35
Pre-treatment DSC Acres	3.41 acres	3.41 acres
Post Treatment DSC Acres	3.41 acres	2.99 acres

New road construction for Alternative 2 would include approximately 0.3 miles of replacement road construction on side slopes and would result in approximately 1.06 acres of new soil displacement. Approximately 0.53 miles of closed road would be re-contoured (reducing the existing DSCs by 80-90% or more) resulting in approximately 0.11 acres of residual DSCs, down from 1.6 acres of DSCs. These actions allow a net overall reduction of DSCs associated with the road system of 0.42 acres.

Culvert removal and associated re-contouring is associated with the road work and would not provide additional reductions in DSCs.

Soil displacement resulting from tree acquisition and LWM placement in Corral Creek would be short lived and result in very little compaction due to single passes with light footprint excavators. Effects would be similar to grapple piling which results in 1-2% DSCs (Kreger, 2004).

There would be no measureable direct effects to soils following construction of the Pole Creek fence. No equipment beyond ATVs would be used during construction.

It is important to keep in mind that DSCs naturally change over time. Some DSCs recover in a few years to decades, while other DSCs require recovery times of 100 or more years without restoration treatments. DSCs with long recovery rates are often considered for restoration treatments, where environmentally and economically feasible.

Indirect Effects

Alternative 1

Alternative 1 proposes that no new road construction, no road de-commissioning or road reconstruction would occur, resulting in continued loss of soil due to sheet and gully erosion from poorly located roads. Erosion over time is expected to increase without correcting the existing condition.

Alternative 2

The primary indirect effect of road work on soil quality is soil erosion. Soil erosion would increase in the short term on proposed acres of decommissioned roads until vegetation has become established. Following vegetative establishment, erosion would decrease due to increased infiltration following soil de-compaction and increased soil stability afforded by perennial vegetation. Corrections to road surfaces and drainage would reduce soil erosion and delivery of sediment to perennial streams. The addition of large woody material to Corral Creek and fencing on Pole Creek will reduce herbivory by livestock and wildlife and indirectly protecting soil on streambanks and reducing sedimentation into the streams. Long term soil erosion would be less following the proposed treatment compared to the no action alternative 1.

Cumulative Effects

Alternative 1

The cumulative effects of all current and foreseeable direct and indirect effects of detrimental soil conditions on soil quality, soil function, soil productivity, and soil stability within the project area in relation to the Corral Creek project over the next 10 years would be a static trend, with potential for a downward trend due to increasing potential for flood damage.

The combination of the past harvest activities, extensive road network built to facilitate the logging operations that provide continued access, organic matter reductions from prescribed fire and livestock, and recreational use will be considered to assess cumulative effects of this project.

Analysis of the cumulative effects of detrimental soil conditions indicates that soil quality is being maintained on about 92.6% of the adjacent Sandbox project area (Sandbox Vegetation Management Project, Soils, 2013), in comparison to the Forest Plan guideline of maintaining at least a minimum of 80% of the project area in a non-detrimental soil condition. This analysis area included the proposed Corral Creek project area but does not include the upper South Fork Catherine Creek subwatershed where there are lower road densities. The resulting DSCs associated with roads within the project area delineated by the South Fork Catherine Creek subwatershed is only 1.49%, well below the 20% LRMP threshold.

Within the associated Sandbox analysis, most of the existing DSCs were found on existing haul roads that were in the area. Disturbance varied within treatment units dependent upon past harvest activities and the existing road system. The range was from 0% to 26% DSCs. On that 7.4% of the project area considered in a detrimental condition ground cover, fine organic matter and coarse woody material is below potential (including existing roads). The remaining 92.6% currently has adequate ground cover. The project area has also been protected from wildfire and rangelands are managed to retain adequate residual vegetation. Observations made during field surveys indicated satisfactory accumulations of ground cover, fine organic matter, and coarse woody materials on forestland and rangelands.

Alternative 2

Implementation of Alternative 2 would decrease acres of DSCs in the project area from 3.41 to 2.99 acres, a net improvement of 0.42 acres of DSCs or a 12.3% reduction from the existing condition in alternative 1. Alternative 2 includes mitigations that would decrease existing DSCs. Historic placement of roads within the project area did not meet current BMPs for location or drainage control features. Correction of the problems associated with these legacy roads will allow continued recovery of the watershed and further reductions in DSCs while retaining access for forest management and recreation activities. Alternative 2 is in compliance with the DSC standards of the Forest Plan.

Wildlife Resources

Introduction

This analysis focuses on Proposed, Threatened, Endangered, and R-6 Sensitive wildlife species (PETS) and habitats. All the species in Table 10 are known or suspected to inhabit the analysis area.

Table 10. Wildlife Threatened, Endangered and Sensitive Species

Species	Habitat
Rocky Mountain Tailed Frog *Ascaphus montanus*	Historically occupied Pole Creek and Catherine Creek
Fringed Myotis *Myotis thaysanodes*	A type of long eared bat. Roosting habitat may be affected
Johnson's Hairstreak *Callophrys johnsoni*	A type of butterfly. Majority of potential habitat unaffected
Canada lynx *Felix lynx canadensis*	Potential habitat exists within the project area; however it is highly unlikely that these species occur in the area.
Gray wolf *Canis lupus*	Potential habitat exists within the project area but no den sites exist.

The Wallowa-Whitman National Forest Land and Resource Management Plan (LRMP) identifies five wildlife species, or groups of species, as MIS, or Management Indicator Species (U.S. Forest Service 1990). These species are identified because of their special habitat needs that may be influenced significantly by planned management activities, and as a result their populations can be used to indicate the health of a specific type of habitat. MIS species welfare can be used as an indicator of other species dependent upon similar habitat conditions.

The following management indicator species (MIS) (Table 11) were considered in this analysis; however, because this project does not affect any old growth or mature forest habitat nor cover and forage for big game, these species will not be analyzed in this EA. Existing snags and logs within the project area will also not be affected by this project; however, additional logs will be brought into the area and placed in Corral creek to improve riparian and fisheries habitat. While there will be an increase in down logs in the project area they expected to be a very minor potential benefit to primary cavity excavators using this are and therefore, they will not be discussed further in this EA.

Table 11. Wildlife Management Indicator Species

Species	Habitat	Presence Within Analysis Area
American marten	Old growth and mature forest	Yes
Northern goshawk	Old growth and mature forest	Yes
Pileated woodpecker	Old growth and mature forest	Yes
Primary cavity excavators*	Snags and logs	Yes
Rocky mountain elk	Cover and forage	Yes

* Northern flicker; black-backed, downy, hairy, Lewis', three-toed, and white-headed woodpeckers; red-naped and Williamson's sapsuckers; black-capped, and mountain chickadees; and pygmy, red-breasted, and white-breasted nuthatches

Affected Environment

Rocky Mountain Tailed Frog (*Ascaphus montanus*)

Tailed frogs inhabit cold, swift, permanently flowing headwater streams in isolated, discrete populations and show limited movements. Their level of activity is related to both air temperature and humidity, with tailed frogs preferring low temperatures and high humidity. Within a

watershed, distribution is largely restricted to the headwaters or areas of cold water and coarse substrate (Jones et al. 2005).

Concern over the tailed frog arose in the early 90's when it was found that its populations had declined in the Pacific Northwest, primarily because of timber harvesting (Corn and Bury 1989). Bull 1996 found that the variables that best predicted tailed frog abundance was the percentage of a 2000-m stretch of stream containing a buffer, the percentage of boulders and cobble in the stream and the slope.

The tailed frog has been found in in Pole Creek and Catherine Creek. While no surveys have been done looking for the tailed frog in Corral Creek, it can be assumed that if the correct habitat requirements are met, the frog will occupy it.

Fringed Myotis (*Myotis thysanodes)*

The fringed myotis ranges through much of western North America from southern British Columbia, Canada, south to Chiapas, Mexico and from Santa Cruz Island in California, east to the Black Hills of South Dakota. It occurs from sea-level to 9350 ft, but is most common at middle elevations 3937-6890 ft. It appears to be most common in drier woodlands (oak, pinyon-juniper, ponderosa pine) but is found in a wide variety of habitats including desert scrub, mesic coniferous forest, grassland, and sage-grass steppe (O'Farrell and Studier, 1980).

Fringed myotis roosting in decadent trees and snags, particularly large ones, is common throughout its range in the western U.S. Roosts have been documented in a large variety of tree species and it is likely that structural characteristics (e.g. height, decay stage) rather than tree species play a greater role in selection of a snag or tree as a roost (Weller and Zabel et al. 2001).

The fringed myotis feeds on a variety of invertebrate taxa. Several flightless taxa (spiders, harvestmen and crickets) have been found in its diet. The presence of non-flying taxa in its diet indicates that myotis harvests prey from vegetation in addition to catching prey on the wing. It's diet, flight style, morphological design and echolocation indicates it is adapted for foraging along forest edges and within forest interiors (O'Farrell and Studier, 1980).

Identified threats to the fringed myotis largely focus on loss or modification of roosting habitat. Loss of current and future large, decadent trees and removal of large blocks of forest or woodland habitat may also threaten the species due to its apparent propensity for foraging in and around trees (Weller, 2005).

The fringed myotis has been identified in northeast Oregon, and it is assumed that the Corral Creek project area contains habitat for this bat, though no specific records occur.

Johnson's Hairstreak (*Callophrys johnsoni)*

Johnson's hairstreak butterfly is characteristic of mature to old growth conifer forests that have abundant quantities of mistletoe. The distribution is largely restricted to the Pacific Northwest. A disjunct population is thought to be isolated in the Hells Canyon region of northeast Oregon and adjacent to Idaho.

There are 52 records in Oregon with the majority from 3,500 to 6,000 feet in elevation and west of the Cascade Range. There are a few records east of the project area in Baker County (Schmitt and Spiegel 2008). Additional local sightings are needed to document its range. It is unknown if this species occurs within the project area. Johnson's hairstreak

typically spends much of its time in the top of the forest canopy which contributed to the rarity of sightings. It is assumed that the timber harvest contribute to this species reduction in habitat. The species of mistletoe Johnson's hairstreak depends on is abundant throughout the forest and its availability is not the limiting factor to the viability of the population. However, large stand replacing fires do have the potential to reduce available habitat for this species (James and Nunnallee 2011).

Canada Lynx *(Felix lynx canadensis)*

Lynx occur in coniferous forests that have cold, snowy winters and provide a prey base of snowshoe hare (Ruediger et al. 2000). They are typically associated with large contiguous tracts of boreal or coniferous forest in Alaska and Canada, but are also found in high elevation spruce, subalpine fir, and lodgepole pine forests in the western United States. Vegetation that constitutes primary lynx habitat is subalpine fir where lodgepole pine is a major seral species, generally between 1,250-2,000 meters. Cool, moist Douglas-fir, grand fir, western larch, and aspen forests may also contribute to lynx habitat when interspersed with subalpine forests. Dry forest types (ponderosa pine, climax lodgepole pine) are not considered habitat. Hares, their primary prey, exploit early to mid-successional stages and lynx foraging habitat is mixed conifer stands characterized by a dense, multi-layered understory that maximizes hare browse at both ground level and at varying snow depths. Lynx prefer to move through continuous forest and frequently use ridges, saddles, and riparian areas. They commonly select mature forest with dense patches of downed trees for denning (Johnson and O'Neil 2001).

The Blue Mountains represent the southern extent of lynx distribution, which would explain the rarity of this species on the periphery of its range both historically and presently. Based on limited verified records, lack of evidence of reproduction, and occurrences in atypical habitat that correspond with cyclic highs in Canada, lynx are through to occur in Oregon as dispersers that have never maintained resident populations. They are considered an infrequent and casual visitor by the State of Oregon (Ruediger et al. 2000). Lynx habitat in northeastern Oregon is categorized as a "peripheral area" meaning there is no evidence of long term presence, or reproduction that might indicate colonization or sustained use by lynx, but habitat may enable the successful dispersal of lynx between populations or subpopulations (Wallowa-Whitman National Forest Lynx Strategy Letter April 19, 2007). The Forest conducted extensive winter track surveys for wolverine and lynx from 1991 – 1994 and 2 sets of possible lynx tracks were found on the Whitman Ranger District (Wolverine and Lynx Winter Snow Track Reports, 1991-92, 1992-93, 1993-94, Wallow-Whitman NF). One set was found during 1992-93 near the town of Bourne and the other set was found during 1993-94 near Gorham Butte. None of the hair collected from hair snares used for the National Forest Lynx Survey conducted on the Forest from 1999-2001 was identified as lynx. The Forest is considered "unoccupied" habitat; "occupied" habitat is defined as requiring at least 2 verified observations or records since 1999, or evidence of lynx reproduction (Wallowa-Whitman National Forest Lynx Strategy Letter April 19, 2007).

Gray Wolf (Canis lupis)

Considered a habitat generalist, gray wolves occupy a wide range of habitats where there's an adequate prey base and human interference is low (Mladenoff et al. 1995). Historically, they occupied grasslands, sagebrush steppe, coniferous and mixed forest and alpine areas. Wolves prefer fairly large tracts of roadless country containing a mix of forested and open areas with a variety of topographic features (Witmer et al. 1998). The Northern Rocky Mountain Wolf Recovery Plan consider the key components of wolf habitat to be 1) a sufficient, year-round prey base of ungulates (big game) and alternative prey, 2) suitable and somewhat secluded denning

and rendezvous sites and 3) sufficient space with minimal exposure to humans (U.S. Fish and Wildlife Service 1987). The size of wolf home ranges vary greatly across and among different regions, with ranges being reported at 94 km2 in Minnesota and 13 km2 in Alaska (Mech 1970) respectfully, and size and location are determined primarily by prey base (Witmer et al. 1998). Wolves have been shown to avoid densely roaded areas and areas with high human population density (Fuller et al. 1992, Mladenoff et al. 1995). Human caused mortality may be the largest limiting factor in the recovery of wolf populations across their range (Mech 1989, Pletscher et al. 1997).

Wolves were extirpated from Oregon by the mid-19th century, with the last paid bounty occurring in 1946 (Marshal et al. 1996), and are currently listed as endangered on both the federal and Oregon state endangered species lists. Wolves in the northern Rocky Mountains (Oregon, Idaho, Montana, Wyoming, eastern Washington, and northern Utah) have continued to increase annually since the initial reintroductions took place in 1995. As of December 31, 2009 there were at least 1706 wolves in 242 packs in the northern Rocky Mountains (U.S. Fish and Wildlife Service et al. 2010). These numbers are about 5 times higher than the minimum population recovery goal and 3 times higher than the minimum breeding pair recovery goal. Minimum recovery goals (an equitably distributed northern Rocky Mountain wolf population that never goes below 100 wolves and 10 breeding pairs in Montana, Idaho, and Wyoming) have been exceeded every year since 2002 (U.S. Fish and Wildlife Service et al. 2010).

Currently there are two known wolf packs in northeastern Oregon that are currently being monitored by the Oregon Department of Fish and Wildlife. The Imnaha pack (approximately 15 miles east of Joseph, Oregon) was first confirmed as breeding in 2009, however, the pack likely produced pups in 2008 because the pack contained five adult sized wolves in 2009. In the fall of 2009 there were five adults and five pups in this pack. As of March 1, 2011 this pack contained 14 wolves, six of which are radio-collared. The Wenaha pack is centered approximately 20 miles west of Troy, Oregon and contains an estimated four adult wolves and two pups as of August, 2010. (http://www.dfw.state.or.us/news/2010).

Primary management concerns for the WWNF are 1) disturbance to denning wolves or rendezvous sites when pack numbers are low, and 2) providing adequate habitat for populations of prey species such as elk. While no wolves have been documented within the Corral Creek project area, there is potential for wolves to pass through the project area.

Effects Analysis

The following describes the direct, indirect, and cumulative effects on wildlife PETS species. Appendix D describes all present and reasonably foreseeable future activities for the analysis area that were considered in the cumulative effects analysis.

Direct, Indirect and Cumulative Effects

Rocky Mountain Tailed Frog (*Ascaphus montanus*)

Alternative 1 – No Action Alternative

> The no action alternative would not cause any change in habitat for the tailed frog and will result in No Impact (NI).

Alternative 2 – Proposed Action

The action alternative has the potential to improve habitat for the tailed frog. Removal of three culverts will improve fish passage and water flow. Adding woody debris to the streams increases shading and reduces temperature in the water. Planting of conifer seedlings and seeding will add a buffer and increase shade in the long term. Because of this and the possible presence of the tailed frog in adjacent creeks, Alternative 2 has the possibility of providing a Beneficial Impact (BI) to the tailed frog.

Fringed Myotis (Myotis thysanodes)

Alternative 1 – No Action Alternative

The no action alternative would retain all trees and snags and would have No Impact (NI) on the fringed myotis.

Alternative 2 – Proposed Action

Alternative 2 involves the removal of approximately 150 existing and potential roost trees. However all snags and trees over 21dbh (which have the highest likelihood of being roost trees) will be retained. With this taken into account, Alternative 2 May Impact Individuals or Habitat (MIIH) but is not expected to lead to a population decline of the species.

Johnson's Hairstreak (*Callophrys johnsoni)*

Alternative 1 – No Action Alternative

Under the no action alternative, no trees would be removed, leading to **No Impact (NI)** result from Alternative 1.

Alternative 2 – Proposed Action

Under Alternative 2, large trees will be removed from the landscape and placed within the stream. However, mistletoe is abundant within the project area and the level of tree removal in Alternative 2 will not significantly reduce the availability of host plants for this species. For these reason, Alternative 2 **May Impact Individuals or their Habitat (MIIH)** but is not expected to lead to a decline in the population of the species.

Canada Lynx *(Felix lynx canadensis)*

Alternatives 1 and 2 –

Discussion of these alternatives is combined because the effects would be similar. Both of the alternatives for this project would have **No Effect (NE)** to the Canada lynx because it is not considered present on the Forest (Wallowa-Whitman National Forest Lynx Strategy Letter April 19, 2007).

Gray Wolf (*Canis lupis*)

Alternatives 1 and 2 –

Discussion of these alternatives is combined because the effects would be similar. Gray wolves are habitat generalists and the project area would continue to provide marginal habitat. Wolves are known to avoid densely roaded areas, choose areas free of human disturbance for denning and rendezvous sites, and therefore would be expected to avoid the project area during breeding. There is no known denning or rendezvous sites on or in the immediate vicinity of the project area. Effects of the proposed project should have no direct negative impacts on wolves, wolf habitat, or potential habitat. There would be no effects to the gray wolf from this project because: 1) no denning or rendezvous sites have been identified within the project area, and 2) prey species will not be negatively affected by proposed actions therefore it can be determined that the proposed project would have **No Effect (NE)** to the gray wolf (Wallowa-Whitman National Forest Gray Wolf Listing Letter April 27, 1999).

Threatened, Endangered, Proposed and Sensitive Plant Species

A Biological Evaluation (BE) addressing Proposed, Endangered, Threatened, or Sensitive (PETS) plant species has been prepared for this project to determine its' effects on Federally proposed or listed species, in accordance with legal requirements set forth under Section 7 of the Endangered Species Act (19 USC 1536(c)). The results of the BE are described below. The complete Biological Evaluation is located in the project analysis file.

Table 12. Proposed Endangered, Threatened or Sensitive plant species known or suspected to occur on the Wallowa-Whitman National Forest (January 2013)

Classification	Species	Occurrence		Effects		Rationale
		WWNF	LGRD	Alt 1	Alt 2	
Sensitive	Crenulate Moonwort	D	D	NI	NI	No known sites; none located during surveys
Sensitive	Moonwort	D	D	NI	NI	No known sites; none located during surveys
Sensitive	Mountain Grape-Fern	D	D	NI	NI	No known sites; none located during surveys
Sensitive	Stalked Moonwort	D	D	NI	NI	No known sites; none located during surveys
Sensitive	Upward-Lobed Moonwort	D	S	NI	NI	No known sites; none located during surveys
Sensitive	Prairie Moonwort	D	S	NI	NI	No known sites; none located during surveys
Sensitive	Western Moonwort	D	S	NI	NI	No known sites; none located during surveys
Sensitive	Linear Moonwort	D	S	NI	NI	No known sites; none located during

Classification	Species	Occurrence		Effects		Rationale
		WWNF	LGRD	Alt 1	Alt 2	
						surveys
Sensitive	Cordilleran Sedge	D	D	NI	NI	No known sites; none located during surveys

D= Documented occurrence
S= Suspected occurrence
NI= No Impact

Grapeferns/ moonworts (*Botrychium* sps.)

There are 8 sensitive Botrychium species that are documented for the Wallowa-Whitman National Forest, four of which have also been discovered in approximately 70 sites on the La Grande Ranger District. Botrychium can be found growing in a variety of habitats, mostly in mesic areas including meadows, moist woodlands, along small streams and valley bottoms where soils are moist and high in organic matter, brushy secondary woodlands, and open-to-closed canopy forests.

***Carex cordillerana* (syn – *Carex backii*)**

There are 57 occurrences for the sensitive species *Carex cordillerana* (Back's sedge), 16 of which are located on the La Grande Ranger District. On the forest, this species occurs within the dry forest types, both underneath the forest canopy and along the transition between forest and grasslands, often at the edge of shrub (ninebark and snowberry) patches.

Determination Of Effects

There are no known sites for sensitive plant species, and no plants were located during project or species-specific surveys. There will be no impact from the Corral Creek Road and Restoration project on any moonwort, grape-fern or sedge.

Invasive Species

Introduction

The analysis for the Corral Creek project covers the specific areas where ground disturbance will occur within the project boundary. Mitigation measures contained in this document will be used to deal with specific issues after completion of final planning, and before ground disturbing activities are begun.

The Pacific Northwest Region Invasive Plant Program Record of Decision (ROD) (USDA, 2005) and the Wallowa Whitman Land and Resource Management Plan (LRMP) (USDA, 1990) decisions mandate prevention and management of non-native species under all planning efforts.

The LRMP as amended by the Region 6 ROD (amendment #RF5) outlines 23 standards for the prevention and management of invasive non-native plants that have been added to all regional Forest Plans and require consideration of invasive species in all planning efforts. The regional ROD does not however approve any site-specific treatment, instead requiring a completed analysis by each National Forest. Therefore, the Wallowa-Whitman FEIS was completed to

provide direction for a site-specific program to contain, control, and eradicate new and existing invasive species infestations found within national forest system (NFS) lands.

Of the 23 prevention and management standards in the regional ROD, seven directly affect activities found in the Corral Creek project. These standards are:

1. Prevention of invasive plant introduction, establishment, and spread must be addressed in watershed analysis, roads analysis, fire and fuels management….. grazing allotment management plans, timber harvest and sale, and all other land management assessments.
2. Actions conducted or authorized by written permit by the Forest Service that operate outside the limits of the road prism, require cleaning of all heavy equipment prior to entering NFS lands.
3. Use weed-free straw and mulch for all projects, conducted or authorized on NFS lands.
4. Use only gravel, fill, sand, and rock that are judged weed free by District weed specialists.
5. Conduct road blading, brushing, and ditch cleaning in areas with high concentrations of invasive plants in consultation with District or Forest-level invasive plant specialists, incorporate invasive plant prevention practices as appropriate.
6. Develop a long-term site strategy for restoring/re-vegetating invasive plant sites prior to treatment (if invasive plant treatment is needed prior to project activities as a prevention measure).
7. Native plant materials are the first choice in re-vegetation for restoration and rehabilitation where timely natural regeneration of the plant community is not likely to occur.

Under the Region 6 ROD, these standards apply to the prevention and management of all invasive non-native species and not just those listed as “noxious weeds.”

Invasive plants are defined as non-native plants, whose introduction is likely to cause economic, environmental, or human health harm. An invasive species is distinguished from other non-natives by their ability to spread in native ecosystems. “Noxious weeds” on the other hand is a legal term used by state, county, and federal agencies to denote plants that pose particular threats, generally to agriculture. Many undesirable non-natives can be invasive and pose threats to healthy native plant communities but do not meet the criteria for listing as a “noxious weeds.” For that reason, this analysis will focus on all invasive non-native plants and not just those listed as “noxious weeds.”

The complete report for these species is located in the Corral Creek Road Relocation and Restoration Project analysis file.

Affected Environment

There are 2 inventoried invasive non-native plant sites (4 different species) within the Corral Creek Restoration Project Area. The inventoried infestations are shown in the table below (Table 13) and on a map in the Analysis File. Acreages reflect current information in the Forest GIS layer (GIS query, 2011). In addition to these listed species the project area also includes Cheat Grass (*Bromus tectorum)*, and Canada thistle *(Cirsium arvense)*.

Table 11. Invasive plant inventory for the Corral Creek project area

Common Name	Scientific Name	Number of Sites	Acres
Stinking Willie, Tansy Ragwort	*Senecio jacobaea*	1	0.09
Gypsy Flower, Hounds Tongue	*Cynoglossum officinale*	1	129.5
Canada Thistle	*Cirsium arvense*	Linear presence along 600 road	N/A
Total Acres			**129.59**

Effects Analysis

The following describes the effects of implementing this project on invasive species.

Direct and Indirect Effects

Alternative 1 – No Action Alternative

This alternative is the no action alternative. All inventoried weed sites would continue to be managed in accordance with the Wallowa-Whitman Forest Plan as amended by Regional Forester Amendment #5 that incorporates the Pacific Northwest Region Preventing and Managing Invasive Plants Record of Decision (USDA, 1990; USDA, 2005).

Many vectors for spread of known populations would exist with recreation and vehicle travel, livestock and big game transport, uncontrolled wildfire, and fire suppression activities. However, the potential risk of spread from project related equipment used for roadwork, and prescribed fire would not exist. Over time, without additional disturbances to known sites, further treatment success, and no reduction to existing desirable vegetation cover and vigor the known sites could be eradicated or significantly reduced.

Alternative 2 – Proposed Action

While direct effects of the previously specified activities on non-native plants are difficult to predict and quantify, they would occur through ground disturbance and introduction of invaders into new areas. Disturbance associated with road construction and log skidding are expected through movement of heavy equipment, soil displacement, vegetation compression. Project activities can introduce new species into areas by transporting non-native plant material on machinery or personnel. Many of the activities in the Corral Creek Project (road construction, culvert placement/removal, tree removal, etc.) require the use of large machinery or equipment that disturb ground or transport invasive plant material if not cleaned properly prior to each use.

Indirect effects include the possible increase in “invisibility” of a plant community after disturbance. Changes in community dynamics (i.e. reduced competition) from project activities could continue or possibly increase the spread of invasive non-native species. There would be no effect to any threatened, endangered, candidate or proposed plant species from project activities. The project may impact undiscovered Region 6 sensitive plant species or habitat. The project would not contribute to a loss of viability of, or move

a species toward federal listing (FSM 2672.43). No impacts would occur to any documented sites.

Soil displacement and disturbance in the habitat with potential for sensitive plant species could destroy individual plants on the sensitive list, if they are present. However, the disturbances created would be offset by the long term protection provided by the in stream structure placement, the wetland habitat creation and improvements, and potential restriction of recreational vehicles via boulder placement provided by the project. If sensitive plants are present and are destroyed, the project may impact individuals or habitat, but the action would not likely contribute to a trend towards federal listing or cause loss of viability to the population or species.

Cumulative Effects

Alternative 1 – No Action Alternative

There are no known cumulative effects associated with the no action alternative on invasive species.

Alternative 2 – Proposed Action

Project activities associated with roads, grazing, and timber harvests have the highest possibility of cumulative effects within Corral Creek. Roads are a vector of weed spread and transport, thus unregulated road use, construction of temporary roads, and re-opening of previously closed roads increases the risk. The immediate closure and restoration of temporary, decommissioned, and closed roads after project use will reduce the risk to non-native species. Grazing could also increase the risk of spread and introduction of non-native species. Livestock are vectors of plant material and can transport seeds and other plant reproductive material over distances. The possible increase in the number of non-natives due to project activities coupled with transport by livestock could increase the risk for areas outside of the actual project and treatment area boundaries. These impacts along with tree removal and road construction; equipment and material staging areas, skid trails, etc.; could compound the situation for invasive plants. These disturbed areas are likely sites of invasive plant infestation. Monitoring of completed project site, restoration of disturbed areas, and treatment of infestations would reduce the overall risk of establishment and spread of invasive plants.

Several mitigation measures would be implemented to stop the spread of noxious weeds in the project area. Prior to project implementation, known weed sites listed above and any additional weed sites discovered at that time would be flagged and pulled by knowledgeable personnel approved by the District's Noxious Weed program. Equipment would be power washed prior to operating on this project. The project lead may choose to have equipment operators avoid the flagged noxious weed areas. The project area would be extensively monitored for invasive plant species infestations for three years following completion of the project.

Fire Management

Introduction

Forest Service Road 7787620, the "Corral Creek Road" is a draw bottom road that, that runs adjacent to Corral Creek for approximately 0.6 miles. This portion of the road is currently in poor shape due to spring runoff and its proximity to Corral Creek. Forest Service Road 7787620 is the only access road (without returning to Highway 203) to get from south of the South Fork Catherine Creek drainage (a prominent drainage) through to the north and up the 7787700 with a vehicle.

Effects Analysis

The following describes the effects of implementing this project on fire access into the Corral Creek project area.

Direct, Indirect and Cumulative Effects

Alternative 1 – No Action Alternative

If no action is taken the road will continue to deteriorate and become difficult to travel and eventually impassible. Without the Corral Creek road access in this area, fire response times increase by as much as 3 fold and public and firefighter safety would be compromised without having ingress/egress opportunities in and out of this area.

Alternative 2 – Proposed Action

The proposed action is to relocate approximately 0.6 miles of the 7787620 road out of the draw bottom. Relocating this section of the road will rehabilitate the creek bed and improve the road for vehicle travel. The Corral Creek road is essential to fire suppression and public safety. Having the option to get out of the South Fork Catherine Creek drainage to the north and south allows for more timely fire suppression response and provides safer ingress/egress for firefighters and public if a wildfire should occur.

Ongoing and proposed projects in the area include; Upper Catherine Creek TSI project and the Sandbox Vegetation Project. Both projects utilize the Corral Creek road to access treatment units. Improving access will continue to support these existing projects and improve fire suppression access into the area and the adjacent roadless and wilderness areas.

Cultural Resources

Introduction

This section covers the existing conditions and effects of implementation for heritage resources. Reports and analyses can be found in the Corral Creek analysis file.

Affected Environment

Prehistory

The Corral Creek project area elevation ranges from 3,700 feet to 6,500 feet. Due to the elevation gradient of the project area Native American use is assumed to have been occasional to seasonal. Temporary camps were limited to spring, summer, and early fall use. Deer and elk and other big game continue to be significant source of meat for Tribal members today. Plants are also gathered within the region by Tribal members. Some specific plants observed by the archaeologist during survey includes Douglas-fir, ponderosa pine, larch, spruce, white fir, willow, aspen, juniper, sage, rabbit brush, currant, ceanothus, yarrow, balsam root, strawberry, huckleberry, and grasses.

Prehistoric and historic American Indian cultural resource site types may include such things as lithic scatters, toolstone quarries, and plant processing sites, seasonal camps etc. Special places may consist of sites and places that are valued for cultural, religious, or traditional importance. Tribal members have expressed interest in this project area specific to huckleberry gathering and the potential for maintenance and enhancement of huckleberry production for protection of tribal treaty rights.

History

Trappers and Protestant and Catholic missionaries began to arrive in the area around 1807. In 1855, treaties were formed with the Cayuse, Umatilla, Walla Walla, and Nez Perce tribes. Persons who traveled to the Willamette Valley often passed through northeastern Oregon on the Oregon Trail. Settlements were not established in the area until the 1860s at the same time gold began to be discovered. Gold mining created the need for new and larger settlements. Gold camps stimulated the economy through their demand for food, living supplies, and mining equipment. The need for food brought ranchers to the area. Once the railroad reached the region, the lumber market grew. By the 1880s, lumber began to be shipped to distant markets.

Effects Analysis

The Corral Creek Road Relocation and Restoration Project heritages resources analysis area encompasses all of the 15,343 acre project area. The area of potential effect, following Region 6 guidance and 36 CFR 800.16(d), for the Corral Creek project area consists of slopes less than 15 percent within the analysis area. Site records and existing maps were reviewed; all known sites were surveyed again for this project. Transects that follow Oregon State Historic Preservation Office guidelines at 20 meter intervals were used. Springs are considered a high potential area and were surveyed.

Cultural resource identification in the project area focused on three primary types of resources: prehistoric archaeological sites, historic archaeological sites, and places that support resources of contemporary tribal interest. No new or isolated sites were discovered within the project area.

Direct, Indirect and Cumulative Effects on Heritage Resources

Alternative 1 – No Action Alternative

Under this alternative, no treatment activities would be undertaken.

Alternative 2 – Proposed Action

Avoidance criteria built into the design of the action alternative provides protection of all known heritage resources within the project area. Mitigation measures are in place and will be part of contract specifications should any new cultural sites be discovered during project activities. Because these measures are adequate to protect heritage resources within the project area there are no direct, indirect or cumulative effects on heritage resources from this alternative. Alternatives 2 would be consistent with the Wallowa-Whitman Land and Resource Management Plan as all cultural resource standards and guidelines would be met (USDA Forest Plan 1990).

Recreation

Introduction

Recreation activities within the Corral Creek project area are predominately dispersed in nature, however, developed sites, trail use and special use permitted activities occur within the project area. Other recreation activities are focused on day use activities such as OHV use, snowmobile use, hunting, firewood gathering, mushroom picking, and viewing scenery. The highest use in this area occurs during the big game hunting seasons when hunters occupy many of the dispersed campsites within the area.

The analysis area is the project area as described in this EA. This analysis area is characterized by a diverse range of habitats. Northern aspects and higher elevations consist of mixed conifer types, ridge tops and southern aspects transition into ponderosa pine, Douglas-fir, and dry grand fir types.

The 1990 Wallowa-Whitman National Forest Land and Resource Management Plan (Forest Plan; WWNF 1990) uses the recreation opportunity spectrum (ROS) framework for stratifying and defining classes of outdoor recreation environments, activities and experience opportunities. There are seven ROS classes arranged along a continuum from primitive to urban. Corral Creek lies within the ROS class Roaded Natural.

Other Forest Plan Recreation standards and guidelines that apply to the proposed activities in the Corral Creek area include winter recreation; recreation site development; outfitter/guide services; special places such water features, rock or unique landform features, historic sites, etc.; and road, trail and area motor vehicle use in accordance with the forest travel management plan.

Affected Environment

The area immediately affected by the activities proposed in this project has no developed recreation sites or developed OHV trail resources. The Sand Pass trailhead and parking area is on the peripheral edge of this area. There is one established dispersed camping site along South Fork Catherine Creek within the project area. The current condition of the road surface through the project area is very rough. Large boulders in the roadway are capable of striking the undercarriage of passing high clearance vehicles. Public firewood cutting is prevalent in the area near the project.

Effects Analysis

Direct, Indirect and Cumulative Effects

Alternative 1 – No Action Alternative

There will be no direct, indirect, or cumulative effects to recreation from the no action alternative.

Alternative 2 – Proposed Action

Access will not be inhibited to the Sand Pass trailhead from the 77 road as a result of project implementation. The most accessible routes to the Sand Pass Trailhead and to Buck Creek Campground will not be affected by this project. The estimated construction period (mid-June through mid-September 2014) may cause a short term impact to recreation users wishing to pass through the project area due to equipment placement, noise, dust, dump truck traffic, and intermittent road blocks. The planned reconstruction and resurfacing of the 600 and 620 roads will improve access and safety for public recreationists. In the long term, recreation activities are not expected to be effected by this project.

Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans

Alternative 1 is compliant with the Visual Quality Objectives (VQO) that are Forest Plan Standards. It is expected that Alternative 2 would not reduce the scenic integrity and thus retain the existing visual quality objective standards established in the Forest Plan.

Required and Additional Disclosures

This section discloses the effects of the alternatives on the human environment as specified by law, regulation, policy, or Executive Order.

Tribal Treaty Rights

Treaties provide that Native Americans will continue to have the right to erect suitable buildings for fish curing, privileges of hunting, gathering roots and berries, and pasturing stock on unclaimed lands. Indian treaty rights and privileges were considered throughout this analysis and maintained through appropriate design and layout features, especially related to first food resources such as fish, wildlife, and riparian areas. Both alternatives are equal in their treatment of treaty rights and are expected to maintain treaty rights and opportunities into the future.

Biological Diversity

All existing native and desirable introduced species and communities are maintained with both alternatives. Erosion control measures (seeding, straw bales, etc.) would use native species and certified weed-free materials. Biological diversity is not expected to be affected.

Public Safety

No long-term public safety problems are anticipated with this project. Short-term safety hazards such as truck traffic and equipment needed for road decommissioning and construction, log placement, and culvert replacement. These activities falling would be mitigated through contract safety provisions and are not anticipated to impact public safety.

There is no expectation that there would be a change in public health and safety. Mitigation and precautions apply to the action alternative. Under Alternative 2 safe firefighter ingress and egress would be improved. No such improvement would occur under Alternative 1. Other safety measures are discussed in or are a standard part of project contracts.

Research Natural Areas, Experimental Forests, and Wilderness

There are no research natural areas, experimental forests, or wilderness areas associated with the Corral Creek Road Relocation and Rehabilitation project. There are no known significant cumulative effects from the project and other projects implemented or planned on areas separated from the affected area of the project beyond those evaluated in Chapter IV of the FEIS of the Forest Plan. The physical and biological effects are limited to this analysis area. No actions are proposed which are considered precedent setting.

There are no known effects on the human environment that are highly uncertain or involve unique or unknown risks. None of the actions threaten a violation of Federal, State, or local law. Action alternatives would comply with air and water quality regulations (laws). The effects on the quality of the human environment are not likely to be highly controversial based on public participation.

There is no expectation that there would be a change to public health and safety. Mitigation and precautions apply to all the action alternatives. Should there be a wildfire under any alternative, there could be an adverse impact to public health in terms of air quality and a change in the water quality. Other safety measures are discussed or are a standard part of sale contracts.

There are no known plant communities containing yew species within the analysis area.

Probable Adverse Environmental Effects that Cannot Be Avoided

Some impacts caused by implementation of management activities proposed in this analysis that cannot be avoided may be considered adverse according to individual interpretations. Disturbed areas are not a pleasing sight to some people, visually or environmentally. Truck traffic would compete with public traffic on roads used in common. Traffic and construction activities would also create dust and noise. Recreation users may experience some delays during construction activities.

Irreversible and Irretrievable Commitment of Resources

Irreversible resource commitments are actions that either deplete a non-renewable resource or disturb another resource to the point that it cannot be renewed within 100 years. No heritage sites will be negatively affected.

Impacts to soil and water are controlled by management practices and mitigation measures and would not represent an irreversible resource commitment. For all practical purposes, rock is a non-renewable resource. Use of rock as surfacing represents an irretrievable commitment of a

resource, although due to quantities of supply, it is not a significant commitment. Existing roads constitute a more-or-less permanent commitment of a portion of land to a purpose other than timber production.

Energy Requirements of Alternatives

Management activities such as heavy equipment usage are less energy-efficient. The need for less energy-efficient and more expensive techniques is often due to the need to achieve project outcomes, mitigate soil damage or adverse effects on watershed and other resources that would occur if more energy-efficient means, such as hand placement were employed.

Prime Farmlands, Range Land, Forest Land

Actions taken under any of the alternatives would have no impact on farmland, rangeland, or forestland inside or outside the National Forest. There are no prime farmlands affected by the proposal.

Civil Rights, Women, Minorities, Environmental Justice

There are no known direct or adverse effects on women, minority groups, or civil rights of individuals or groups. Action alternatives are governed by sale or service contracts, which contain nondiscrimination requirements to prevent adverse impacts to these groups. The no action alternative may have some short-term adverse impacts on the local community by not providing timber sale receipts. To the greatest extent possible all populations have been provided the opportunity to comment before decisions are rendered on proposals and activities affecting human health or the environment. The proposals within this EA would not have a direct or indirect negative effect on minority or low-income populations (Presidential Exec. Order No. 12898 on Environmental Justice).

Wetlands and Floodplains

Wetlands and floodplains associated with streams and springs would be protected and enhanced using design criteria and mitigation guidelines previously identified. No designated Wild and Scenic rivers would be affected by this project proposal.

Executive Order 11190 requires the Forest Service to “avoid to the extent possible the long and short term adverse impacts associated with the destruction or modification of wetlands”. The Corral Creek Road Rehabilitation and Restoration Project is consistent with this EO because it does not propose to destroy any wetlands and any modifications to the wetlands would enhance them moving the project toward riparian management objectives. Executive Order (EO) 11988 requires the Forest Service to “avoid to the extent possible the long and short term adverse impacts associated with the occupation or modification of floodplains. The Corral Creek Road Relocation and Rehabilitation Project is consistent with this EO.

Finding of No Significant Impact

As the responsible official, I am responsible for evaluating the effects of the project relative to the definition of significance established by the CEQ Regulations (40 CFR 1508.13). I have reviewed and considered the EA and documentation included in the project record, and I have determined that the proposed action and alternatives will not have a significant effect on the quality of the human environment. As a result, no environmental impact statement will be prepared. My

rationale for this finding is as follows, organized by sub-section of the CEQ definition of significance cited above.

Context

For the proposed action and alternatives the context of the environmental effects is based on the environmental analysis in this EA.

Intensity

Intensity is a measure of the severity, extent, or quantity of effects, and is based on information from the effects analysis of this EA and the references in the project record. The effects of this project have been appropriately and thoroughly considered with an analysis that is responsive to concerns and issues raised by the public. The agency has taken a hard look at the environmental effects using relevant scientific information and knowledge of site-specific conditions gained from field visits. My finding of no significant impact is based on the context of the project and intensity of effects using the ten factors identified in 40 CFR 1508.27(b).

1. Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.

   Impacts that may be both beneficial and adverse are discussed in the Effects of Implementation section of the EA. These impacts are within the range of those identified in the Forest Plan. The actions will not have significant impacts on other resources identified and described in this analysis. The effect of the decision is non-significant in the long and short term.

2. The degree to which the proposed action affects public health or safety.

   Public health and safety will be minimally affected over a short term by the proposed project. Short-term safety hazards such as truck traffic and heavy equipment on and near roads will be mitigated through contract safety provisions (EA, pp. 49-51).

3. Unique characteristics of the geographic area such as the proximity to historical or cultural resources, parklands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

   This project proposal does not affect any unique geographical characteristics such as parklands, prime farmlands, wild and scenic rivers, or ecologically critical areas (EA, p. 52).

4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.

   Based on the analysis of the effects of implementing this project no substantial scientific evidence exists to dispute the size, nature, or effects of this project on any human environmental factors. (EA, Environmental Impacts section)

5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

   There are no known effects on the human environment that are highly uncertain or involve unique or unknown risks associated with this project. Road obliteration and construction, instream enhancement, and fencing are common practices and the effects are well known.

The EA effectively addresses and analyzes issues and environmental impacts associated with the project (EA, Environmental Impacts section).

These actions pose no disproportionately high or adverse human health or environmental effects, including social and economic effects, on minority or low-income populations. This project has shared in the federal government's overall trust responsibility to Indian tribes where treaty or other legally defined rights apply to National Forest System lands. Consultation has incorporated opportunities for tribal comments and contributions to the proposed action. Confederated Tribes of the Umatilla Indian Reservation (CTUIR) and the Nez Perce Tribe were provided copies of the proposed action and heritage reports. The CTUIR Board also received several general briefings on this project during formal consultation meetings in 2011, 2012, and 2013. Discussions with tribal archaeologists have been incorporated into project design. No other comments were received. (EA, pp. 47-49, 50)

6. The degree to which the action may establish precedent for future actions with significant effects or represents a decision in principle about a future consideration.

   These actions do not set a precedent for other projects that may be implemented to meet the goals and objectives of the Wallowa-Whitman National Forest Land and Resource Management Plan. The Forest Plan, as amended has set a goal of protecting and enhancing riparian and fisheries habitat. This project does not change or amend the forest plan. (EA, pp. 1-3)

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

   There are no known significant adverse, cumulative, or secondary effects between this project and other projects (completed, active, or planned) adjacent to the affected area. Effects to the basic resource values of soil, water, vegetation, air, or fish and wildlife were estimated and determined to be localized and limited (EA, pp. 13-52). This determination is based on the results of cumulative effects analyses discussed in the EA that considered past, existing, and proposed activities.

8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.

   Based on a cultural resource inventory and report, mitigation and protection measures, the known cultural, scientific, or historical resources within the project area have been protected during project design (EA, pp. 47-49, 50). Field studies have been completed for cultural and historic resources (Heritage Report, analysis file). The contract will contain a contract clause requiring protection of any newly detected sites. Consultation with potentially affected tribes and SHPO has been completed.

9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

A biological evaluation for wildlife proposed, endangered, threatened, and sensitive (PETS) species indicates that this project received a "no impact" determination for the "sensitive" Johnson's hairstreak, Rocky Mountain tailed frog, and fringed myotis. Canada Lynx and gray wolf received a "no effect" determination. (Wildlife Biological Evaluation, Analysis File)

The biological evaluation for fish species indicates that this project may affect but is not likely to adversely affect summer steelhead, spring Chinook salmon, bull trout, and their designated critical habitat. NMFS concurred with this finding in their Letter of Concurrence (LOC), dated XXXXXX, 2014 and US Fish and Wildlife Services' LOC dated XXXXXX, 2014 (Analysis File). No terms and conditions were provided.

Implementation of the Corral Creek Project may impact redband trout individuals or habitat for this species, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species. (EA pp. 24-25)

The biological evaluation for PETS Plants indicates that project activities will have no impact on any sensitive plant species. (EA pp. 42-43)

10. Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment. The actions proposed in this project are all focused on protecting and enhancing the environment by removing and relocating a drawbottom road, enhancing instream habitat, providing fish passage, and protecting a stream from grazing impacts (EA, Environmental Impacts pp. 13-52)